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# Neuroscience in the workplace

How understanding the brain can transform your business



## Summary

This paper on the subject of neuroscience will help you to think differently, and with fresh insight, about behaviour in the workplace as well as how to approach situations at work with a new perspective both as a leader and as an employee.

The paper firstly gives an overview of neuroscience and the brain in order to give a sense of how our brain operates and influences our thoughts and feelings. It then goes on to look at specific scenarios in which we can consider the impact of neuroscience such as leadership behaviours, rewarding employees, introducing change and learning and development.

Lastly, this paper will look at how the learning gained from a greater understanding of neuroscience can be applied in everyday situations and for continuous improvement in approaching change particularly in the workplace.

## Introduction

Imagine that you are a manager discussing quarterly earnings in a meeting. Your brain stem makes sure your heart beats and you are able to breathe. Your limbic system is taking in all the outside information about heat, light, people, sounds, and funnelling it through a complex network to help you interpret it and react to it emotionally. Your cortex is allowing you to speak fluently and coherently, to plan for what you are going to say next, to focus your thoughts, to calm your nerves, and to respond to questions. Most of that is going on beyond your conscious awareness.

All of a sudden and unexpectedly, there is a loud bang. Your brain automatically processes the sound, tries to identify where it came from, and seeks to determine if it is a threat or not. The flight or fight instinct is in play immediately. Your heartrate might increase. Your breathing may stop for a second. You look toward the source of the sound and a split second of fear or shock will be all that you can think about. In the moments after, your cortex starts to take control and you realise that it was just an employee banging their fist on the table. You would then need to process how to respond (in emotions, in tone, in posture, and in words).

All this happens in parallel, and takes only seconds. If you can understand the process of your own brain and how sensory information, emotions, and thoughts impact you and your behaviours, you can begin to realise how they may impact the brains of others. This increased awareness of the brain and how it functions can give you an advantage in being a better leader and creating a better workplace.

As a team manager or an HR manager, the human brain is a key stakeholder in every activity and every decision you make. Understanding the way it works can make a huge difference in attracting the right talent, retaining high-performing employees and fostering collaborative teams that function well together to deliver company objectives.

## The Role of Neuroscience in Business

More and more, the word neuroscience pops up in various aspects of life. Knowledge of the brain has entered the mainstream, everywhere from education to business, and even to popular culture. The Disney-Pixar movie *Inside Out* is just one example of how widespread talking about the brain has become. It seems like everyone knows something about neuroscience these days.

Keeping up with the new insights in employee engagement and leadership is far easier to apply in the workplace with a basic understanding of the brain and neuroscience.

### What is Neuroscience?

To put it simply, neuroscience is the study of the nervous system. This includes the brain, spinal cord, and all the nerves throughout the body. Neuroscience is not just about the biology of these structures, but also includes the psychology of the brain, as well as the interactions between the nervous system and other body systems. Over the years, scientists have gained more knowledge about both the molecular structures of the brain and nervous system, and about the behaviours that result from them.

There are many branches of study within neuroscience that have influenced all the sciences and sometimes even aspects of everyday life. Here's a quick overview of the different and most significant branches of neuroscience:

- **Neurology** – disorders of the nervous system and how to diagnose and treat them.
- **Neurobiology** – the structure and function of the nerves and brain.
- **Neurochemistry** – the cellular chemical processes that occur in order for nerves to function.
- **Neurophysiology** – how the nervous system responds to the external world.
- **Neuropsychology** – the interplay between psychological processes and brain function.
- **Neuropsychotherapy** – the use of neuroscience to treat psychological problems.
- **Cognitive Neuroscience** – how the brain and nervous system create cognition.
- **Social Neuroscience** – how the brain and nervous system create social behaviours.

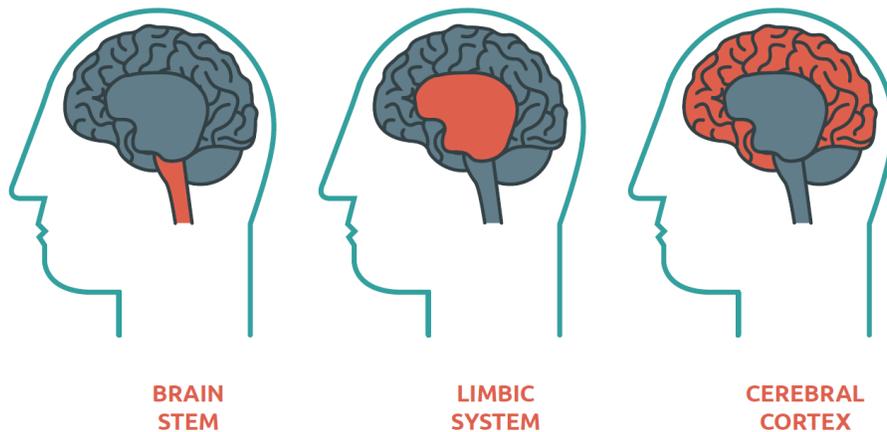
The above list is not exhaustive, but it is a quick introduction into how extensive neuroscience research is and how many fields it now impacts.

In terms of neuroscience and business, much of what is written is written specifically about the brain. We will first look at an overview of brain structures and functions, in order to get a better understanding of why and how people act the way they do.

If we can better understand the brain, we can have a better understanding of the behaviours of ourselves and of the people we work with, as well as discover ways of making the workplace a better place to be.

## Understanding the Brain

The brain is a complex set of over [86 billion neurons](#), all communicating to create all our thoughts, behaviours, and functions. In order to try to organise the brain, scientists have divided it into three main sections: the brain stem, the limbic system, and the cerebral cortex.



### The Brain Stem

The Brain Stem is located at the base of the brain, or at the top of the spinal cord. It is often also called the reptilian brain as it is the oldest part of the brain, in an evolutionary sense. This part of the brain regulates signals coming from the spine and is critical for breathing, heartbeat, sleeping, eating, and other necessary aspects of life. The cerebellum is located behind the brain stem and is important for timing and coordination of movements.

## The Limbic System

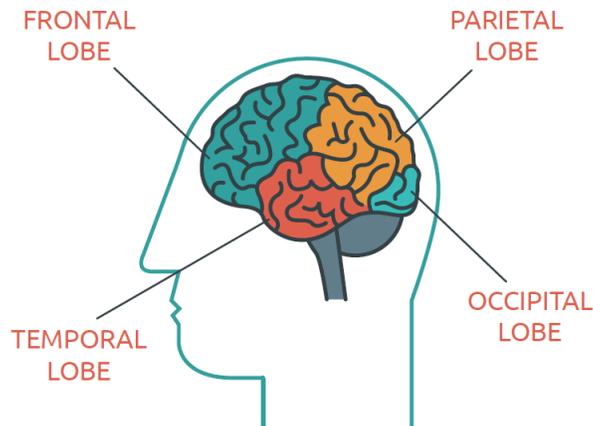
The limbic system is the next “layer” up, sitting on the brain stem, and is sometimes called the mammalian brain. Evolutionarily speaking, this part of the brain came into existence around the time of mammals. The limbic system is important as the emotional centre of the brain. There are many complex functions and structures in the limbic system, and we touch on only a few of them below.

- **Thalamus** – This structure receives sensory information and sends it to other parts of the brain to be processed.
- **Hypothalamus** – A link to the endocrine system, this structure controls the feelings of hunger, thirst, fatigue, and temperature.
- **Amygdala** – This structure helps in the processing of emotions, most notably fear. It also plays an important role in memory formation about pain and body reactions to the environment.
- **Hippocampus** – Often thought of as the memory centre of the brain, this structure stores some memories, but mostly helps memories to be formed and stored throughout the brain.
- **Cingulate cortex** – Sitting on top of and linked closely with the limbic system, this area of the brain is important for attention and awareness of the environment.
- **Nucleus accumbens** – A series of structures sometimes considered to be the reward centre. It has an important role in dopamine and oxytocin. Dopamine helps reinforce rewarding behaviours while oxytocin helps to reinforce bonding and trust-based behaviours. Habit formation and learning patterns are also processed here.

## The Cerebral Cortex

The cerebral cortex is the third and outermost “layer” of the brain. Many mammals have this part of the brain, especially larger mammals like dolphins, large apes, and elephants, but the complexity of the human cerebral cortex is often the basis of what distinguishes us from other mammals.

The cerebral cortex is divided into four lobes: occipital, temporal, parietal, and frontal.



- **Occipital** – At the lower back part of the brain, this lobe is responsible for much of the visual processing that occurs.
- **Temporal** – On both sides of the brain, these lobes help us with abstract thinking, metaphors, and language.
- **Parietal** – Spanning a large area at the top of the brain, this lobe is important for processing sensory details and coordinated and planned movements.
- **Frontal** – At the front of the brain, this lobe is sometimes credited with making us uniquely human, as it controls executive functioning and emotional regulation.

This all may sound a bit too abstract, and you may be thinking what does this have to do with business and leadership? But this is the core base of everything we do as humans, employees, and leaders.

## Our Brain on Hormones

Hormones have a constant impact on us and affect us every second of our lives. Our emotional and physical health is dictated by how these hormones interact with the cells in our bodies and our brain. Neuroscience has been able to show us the exact ways in which hormones impact us and the processes behind them. Therefore, in the business sense, having an understanding of hormones and neuroscience can help you to be a better leader through an increased self-awareness.

Most people think of effective business leaders as confident, resilient, strong, caring, and capable. These aspects, which many people think of as innate qualities or aspects of personality, may be explained by hormones.

Social neuroendocrinology is a field of study in neuroscience focused on how hormones impact social behaviours. Research done in this field has shown that there may be an optimal mix of hormone levels that can prime someone for great leadership. The two keys hormones? Cortisol and testosterone.

## The Hormones

### Cortisol

Often called the stress hormone, cortisol is produced by the adrenal glands in response to stress or low blood sugar. Once released, it leads to higher blood sugar, a suppressed immune system, changes in memory formation, and disrupted sleep. Cortisol is crucial to our survival as it helps us respond to stressors and threats. But too much cortisol can lead to [mental health problems](#) such as depression and anxiety, but also physical health issues such as heart disease.

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Cortisol and testosterone.

## Testosterone

Both men and women produce testosterone, although women produce it at much lower amounts. While it is often associated with male development and functioning, it has many more uses in the body. Testosterone has been shown to effect levels of aggression, dominance, confidence, competition, concentration, mood, sleep, and energy.

In a [2016 study](#) published in The Journal of Personality and Social Psychology, researchers investigated the hormone levels of executives. They found that the executives with the most responsibility as leaders had the highest levels of testosterone. But, those executives also had low levels of cortisol.

As levels of cortisol increased, the level of leadership decreased. So, while all executives with more responsibility had higher testosterone, the leaders who were able to manage their stress levels, lowering their cortisol, were the ones with the most responsibility. This effect is true regardless of [gender](#). Being aware of stress levels and how to address these can help you to increase your effectiveness in a leadership position. Later in this paper we look at ways to reduce cortisol levels, helping you to build awareness and control of this area.

# Using Neuroscience in Talent Management

## The Brain is Plastic

At one time, it was thought that once a person reached a certain age, the brain stopped developing and could not be changed. This has since been proven untrue. It may be more difficult to change some aspects of the brain after a certain time, but the brain still has a lot of plasticity throughout a person's lifespan.

The brain continues to reform and rewire itself based on how much or how little the pathways are used. That means that we can always learn new things.

The pathways are created through the connections of neurons. Each neuron has on average about 1,000 "arms" called dendrites that connect it to other neurons. The connection between the cells is called a synapse and occurs over a small gap called a synaptic cleft.

The way neurons share information is through sending and receiving neurotransmitters across the small gap. The neurotransmitters trigger a chemical process, which creates an electrical charge that travels through the neuron. This process of electrical charge, neurotransmitters, electrical charge, and so on is what creates the pathway of neurons. There is a saying “Cells that fire together, wire together.” That means that when learning a new task or skill or simply discovering things about a new person, the best way to learn and remember it is to do it multiple times, so that the neurons “fire together” and eventually “wire together”.

So what does this mean for talent management and the world of work? Well, for one thing, it means that learning and development should remain a key HR objective. However, given the research above, finding ways to embed the learning in order to “wire together” is important to ensure the learning is effective. Secondly, it tells us that it is never too late for a leader or an employee to learn a new skill or a new way of doing things. Change is hard sometimes, but research tells us it is possible.



## Our Brains Like Rewards

Emotions are an important aspect of how the brain changes and how we learn. Positive feelings activated through the reward system of the brain enhance the pathways and improve learning. The reward system is very complex and has pathways in many areas of the brain, but often it is regulated by the neurotransmitter dopamine.

These pathways and the positive feelings associated with them have been studied using illegal drugs that increase dopamine. In other studies, researchers have found that dopamine also has a role in attention and motivation.

There are two main reward systems in the brain that are related to attention and motivation: primary and secondary. Primary rewards are related to primary needs like food, water, and shelter. We feel good when we have those needs met. Secondary rewards help our survival but are not vital to it. They include things like information, power, trust, touch, appreciation, and community.

For leaders, rewards are often perceived as an effective way to motivate employees.

Based on neuroscience, there are some rewards that seem to release more dopamine than others. Surprisingly, money or material goods, which we often associate with reward at work, are not necessarily the [most effective for motivating people](#). We are not, despite what some people think, all [motivated the same way](#).

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Based on neuroscience, there are some rewards that seem to release more dopamine than others.

Many of the rewards are related to social interaction or recognition in some way. [For example](#), studies have shown that when employees are recognised by the leadership of the company, the impact is great. So great, that in one study nearly one-third of employees would rather be recognised for their work accomplishments in a company-wide email from leadership than receive a \$500 bonus that isn't openly publicised to their colleagues

Following the science, leaders can review their system of motivation and rewards to consider ideas that are proven to be more rewarding to the brain. While each employee is different, there are many ways to reward that would be useful to implement in order to truly activate an employee's reward pathway. More dopamine means employees who are happier, more focused, and more motivated.

## The Power of Mirror Neurons

In the early 1990s scientists discovered mirror neurons. They found that when one person watches another do some kind of action, the neurons of the first person fire as if they were actually doing it.

There is a common example we are all familiar with and that's [yawning](#). Research has shown that yawning can be contagious. Why? Mirror neurons. When one person yawns and another observes, the neuronal pathways for yawning in the observer's brain are activated, causing them to yawn too.

While this may explain why a yawn can seem to travel around an office, mirror neurons are really important for learning, emotional awareness, and empathy. When we watch someone do something, our brain is actually learning how to do it. When we see someone experiencing an emotion, our brain processes that emotion as well, increasing empathy.

Mirror neurons can be an important aspect of people management as we can see how our emotional and physical states as leaders are actually teaching our employees how to act and how to respond emotionally to us.

Having an awareness that our non-verbal as well as verbal communication cues are being "mirrored" by the other person means that we should consider ways to communicate and act that are experienced positively by people. Because of this "mirroring" connection, companies can create environments where people can mirror others who create collaborative and co-operative learning and working atmospheres.

## Emotions are Everything

Many people want to believe that they can make decisions based exclusively on free will and their rational minds. However, research has shown that there are many unconscious processes that influence and dictate why we behave in the ways we do.

Those processes follow brain pathways that were put into place when we were very young. In most cases we have already made a decision before we have actually consciously thought about it. This happens in the limbic system. Our cerebral cortex then has to rationalise the decision through language and planning, leading to, what some may call, the illusion of free will. That is not to say that the cerebral cortex cannot influence the limbic system. It can be seen in people who practice meditation and mindfulness.

When we are faced with stress or a threat, the executive functions of the brain shut down, leaving the unconscious processes of the limbic system in charge of decision making. These parts of the brain react on emotion and survival instincts.

Leaders need to be aware that in terms of learning and team building, change happens not from the cerebral context but from the limbic system, the emotional centre of the brain. With effective recognition from the company, leaders and peers, as well as appropriate rewards and interventions, the slow process of changing the limbic system can start to take place.



# The Basis of Leadership is Born in the Brain

## The New Way to Lead

The brain is a social organ. That means that [we are all born to connect](#). We cannot expect the best results if we only see people as impersonal machines and employment as simply a place full of isolated tasks.

Team leaders and department managers who understand neuroscience know the importance of:

- How the physical environment impacts people productivity;
- Who we spend time with at work and the strength of relationships;
- The interplay between thoughts and emotions and;
- How different types of tasks impact the brain and productivity.

Effective leadership requires understanding emotions, using empathy, and building relationships. This type of [social leadership](#) can create higher confidence, improved relationships between employees, and increased productivity.

## Resonant Leadership

A [recent study](#) done at Case Western Reserve, a US University, found a relationship between resonance and effective leadership. Being resonant means that a leader is empathetic and has a high emotional intelligence level. A dissonant style, on the other hand, is more authoritarian and objective.

Using fMRI (functional magnetic resonance imaging) scans, researchers asked managers to think about experiences when a leader was resonant or dissonant. A total of 14 regions of the managers' brain responded when thinking of resonant leaders, while only 6 regions responded when thinking of dissonant leaders. In fact, up to 11 regions were deactivated when thinking of dissonant leaders.

This shows that resonant leaders activate attention, social awareness, and positive relationships in their employees, while dissonant leaders trigger negative emotions, disregard, limited attention, and decreased social awareness.

Resonant leadership styles also help build trust through the release of oxytocin in their brains and the brains of others.

## The Pathways to Leadership

When investigating the complex processes involved with leadership, many researchers study coherence. Coherence measures the coordinated activity of different areas of the brain in order to determine where there are connections.

[Studies have focused on the frontal cortex](#) due to its role in emotional regulation and functioning, like goal-directed behaviour. More specifically, the right frontal area of the brain is important to interpersonal communication and relationships. Coherence in this part of the brain is essential for social skills, emotional control, and self-awareness. These skills are the basis of being a resonant leader.

One study in particular focused on vision statements, an aspect of leadership based on social emotional functioning in the right frontal area of the brain. During a qEEG (quantitative electroencephalogram) assessment, which uses sensors to capture electrical activity in the brain, executives answered questions about their plans for the company and the future. They were also asked to create a vision statement.

Coders analysed the statements and scored them based on how much they focused on the self or on the team. They found that leaders who used more social language (we and us) in their vision statements were more likely to have higher coherence in the right frontal part of the brain than leaders with more self-language (I and me).

Leaders who used more social language were also perceived by employees as being more inspirational and charismatic in their leadership styles.

In effect, employees viewed leaders who had more right frontal coherence as being more resonant leaders due to the amount of social language they used.

Research is ongoing, but there is some evidence that effective leadership starts in the brain. We now know of some areas of the brain that can influence resonant leadership, but the question becomes how we use the information.

We know the brain is plastic, but it can be difficult to know what to do to influence certain pathways or areas of the brain. There is growing evidence that neurofeedback may be a way to do just that.

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## The Art of Neurofeedback

Neurofeedback uses qEEG and a visual game-like component to activate a certain part of the brain. The game uses electrical readings from the qEEG to control an aspect of the game. If the correct area of the brain is activated, the game responds and the user is rewarded. If the incorrect area of the brain is activated, the game does not respond or there is some kind of penalty.

Due to the plastic nature of the brain, after many sessions of neurofeedback, the brain begins to create new pathways that become automatic. This creates new habits and behaviours.

There is [the potential for neurofeedback](#) to give managers and HR professionals some help in forming new patterns of behaviour. For example, researchers from the study mentioned above, asked a manager to participate in neurofeedback after they mentioned having anger management problems. With knowledge

of what areas in the brain are useful in anger management, the neurofeedback therapist was able to help the manager activate the parts of the brain most helpful in emotional regulation. After many sessions, he was able to reorganise his brain to create stronger pathways in the areas of his brain known to support emotional regulation.

Neurofeedback has also helped people improve their focus and react better to stress.

This may sound like science fiction. A computer alters the brain and the person is different, but that is not true. Neurofeedback cannot make someone a better leader. Its purpose is to help reorganise the brain to give someone the *potential* to be a better leader. It can make the brain more efficient and make it easier for us to behave in certain ways, if we choose to do so.

With continued research, maybe more aspects of leadership will be found to have pathways in certain areas of the brain. Leadership training could become a personal brain-based approach, helping people address some of the areas they may struggle with and unlock their potential.

While there is still a lot that is not known about the brain and how it can make us better leaders, the evidence continues to show that the basis of effective leadership is in understanding the brain and how it functions. Neuroscience can help us all be better leaders.

# How to Improve Employee Engagement Using Neuroscience

Employee engagement can be a challenge for many leaders. It is generally accepted that having higher levels of employee engagement is a good thing for employees as well as the organisation and the bottom line financials.

An understanding of neuroscience can be helpful in increasing employee engagement which can lead to enhanced job satisfaction, productivity, and retention. Because the brain is plastic, it is always adjusting and adapting based on the environment. When you create supportive and collaborative environments, the brains of employees can process information more quickly and more easily, leading to effective change. But if the brains of employees perceive the workplace or their role within it as a threat, then comfort, motivation and satisfaction are all likely to decrease.

By knowing more about the brain, [you can learn to limit threats](#). Often, these threats can come from normal business practices of assessment, changing processes, feedback, and evaluation. This leads us to consider how these standard activities at work can be made a more positive experience for the employee. Because of the lasting negative impacts threats have on our brains, decreasing the amount of threats in the workplace can positively improve employee engagement and motivation.

## The SCARF Model++

Dr. David Rock is a neuroscientist who has created a model for improving the relationship between leaders and employees. He calls this model SCARF. This model stems from research that states the brain is always trying to minimise threats and maximise rewards. Moreover, social experiences follow the same reward and threat pathways in the brain that other primary needs follow.

Imagine one of our ancient ancestors coming across a new creature, plant, or water source. The brain would interpret the unknown thing as threatening or safe and react accordingly. While modern humans are not often in that same position, social experiences follow the same pathways. Dr. Rock uses the SCARF acronym to explain these social forces.



## Status

When people feel uncertain of their social position or feel they are being evaluated, the brain interprets that environment as a threat. This threat is treated the same as a physical threat. In order to be safe, the brain has mechanisms that help us fight or run from the threat – the flight or fight conundrum. In the case of social threats, sometimes those may not be an option, but our brains stay on high alert, making it difficult to focus on other things until the threat is gone, our cortisol (the stress hormone) is heightened and often we need to do something physical to discharge it like go for a walk or run.

As a leader, you can work to create an environment where you are not perceived as a threat and, where possible, any change in the business is also communicated and handled in a way so as to cause the least amount of stress and uncertainty as possible. Perhaps consider doing individual people assessments in a more collaborative way. Start by allowing employees to evaluate themselves and gain insights into their own behaviours. Encourage change to come from the employee instead of the leader. This way, you can decrease the threat level but also improve the engagement the employee has with the company, with you as their leader and their own personal growth.

## Certainty

The brain has developed to be aware of threats. Some people are more sensitive to threats than others, but everyone is able to recognise threats to some degree. The unknown can often be worse than being able to see the threat as this leads to anxiety. Not knowing what will happen next increases the awareness of threats and puts the brain on high alert, making a person feel less safe and less able to focus on tasks at work.

Offer more certainty by working to increase communication with staff so they are more informed and have confidence about the transparency and integrity of the business and their role within it. Be clear in your communication and state expectations, goals, and other information that makes it evident that you are confident and relaxed with their work and capabilities. When employees feel safe and certain in their jobs and the organisation, they will be more engaged in their work.

### Autonomy

Usually with any kind of change comes a choice. We have to think about when we react and how we react. Without this choice, the change (or threat) becomes even more powerful and overwhelming. It can stop us from being able to move forward and leave us unmotivated and feeling hopeless.

Make employees aware that they have choices and that they have some control over their jobs. As a direct manager, try to limit how much you interfere in an employee's daily tasks. Your team members should be trusted to do their work without anyone constantly checking on them.

### Relatedness

People relate to one another in different ways, but often they view others as trustworthy and friendly if they feel the other person seems similar to them in some way. Often people have ways that protect them from the threat of someone new or different. These defences can block out the things that others say or do when they are not perceived as a member of the group.

[Relationship building](#) is a vital part of a productive team. Look for ways to connect to employees and for employees to connect with each other. When everyone in a work environment is viewed as friendly and united, then the brain's threat and alert system is quieter, allowing people to feel more in sync with the team and with their work.

## Fairness

Our brains can be very sensitive to fairness and we are usually aware of and react strongly to situations that we feel are unfair. These threats and the reactions to them can often be emotionally charged, possibly leading to anger and resentment.

To improve a sense of fairness, try to be conscious of how you interact with all employees. Don't show any sign of favouritism or special treatment. Be transparent in all decision making processes. When fairness is at stake, address the issue at hand immediately so that there can be some understanding of why things happen in the way they do.

The SCARF model uses a very basic aspect of human existence, threat and safety. We may not think about these two things on a minute to minute basis, but our brains are always reacting in ways that relate to the pathways that were created in our ancestral pasts.

As leaders or employees, we can probably all think of ways in which something we were effected by could have been looked at as our brains raising the threat alarm. With this in mind, we can learn to be more engaged leaders and employees on a brain-based level.

# The 7 C's of Change Management: Making Change Easier with Neuroscience

Change is rarely easy, especially when a habit has been formed. Just think about how difficult, stressful, and even annoying it can be when someone asks you to change your morning routine or you are forced to change it. That is just one person.

So imagine the challenges of trying to implement a change management process in an organisation, where all people have different habits, responses to change and ways of coping with it.

## The Perils of Change

Unfortunately, change at many organisations does not go as planned and some attempts may even end in failure.

In a [change management survey](#) conducted by Towers Watson, researchers found that while 55% of employers felt that change was initially successful, only 25% felt that the changes were long lasting.

In [other studies](#) it was found that 83% of CEOs believe change is their biggest challenge, while 28% of CEOs were fired because of ineffective change management.

Often, change fails because of four main reasons:

- Ineffective leadership;
- Lack of communication;
- Poor employee involvement;
- Lengthy timeline for change.

We would also add neuroscience, or the lack of neuroscience consideration, to that list of reasons and as an overarching aspect, as its one that could have implications for all of them.

## The Automatic Nature of the Brain

The brain has evolved to create pathways in the brain that respond to and activate habits. Due to these automatic pathways, there can be some resistance to change. When faced with something new, our brains immediately compare it with things we are familiar with.

In general, it takes much more time and energy to try something new than it does to do something habitual. In an effort to save energy, our brains will usually default to the thing that is most automatic, the habit.

For example, if you have learned how to ride a bike as a child, it is probably almost second nature to you as an adult. Even if you do not ride a bike for years, you would be able to get back on a bike and ride with few, if any, issues.

About a year ago, a YouTuber named Destin decided to try to ride a [bike that had the controls reversed](#). When the handle bars were moved in one direction, the wheels moved in the opposite direction. While this seems like a pretty simple adjustment, the bike riding pathway in the brain is so engrained and automatic that it took him 8 months to retrain his brain to ride a bike.

If it took 8 months of riding every day to change the pathways in the brain related to riding a bike, you will appreciate it will take effort, consistency and support to change the habits of all the people in an organisation.

## The Brain on Fear

Not only is change difficult due to existing pathways in the brain, but also because the brain often interprets change as a threat. This perception can activate fear and anxiety, along with the fight or flight response. The fight or flight response causes us to flee from the threat or fight against it. In the case of change, the response and the negative emotions that our brains trigger often limit our openness to new ideas and hinder our decision making skills.

These responses are often unconscious, beyond our awareness. Our amygdala and limbic system take control, limiting the oversight of our prefrontal cortex. We may resist change without even realising why or

even believing we are. It is therefore important for leaders to consider how to present a potential change without urgency or threats in order for people to be able to engage with it and accept it.

## The Stages of Change

While the brain processes the information about change and whether or not it is a threat, people often go through four [stages of change](#).

### Denial

Employees may deny that a change needs to take place and may try to prove that the old way of doing things is better.

### Anger

In this stage employees may start to resent and complain about the changes and blame others for it.

### Exploration

After realising change is inevitable, employees may try to offer their own solutions or think of a better result for themselves or their team.

### Acceptance

After some struggle, employees will eventually accept the change and participate in the change process.

## Change Begins with a C

When looking at change through a neuroscience lens it is important to consider how habits form and how our brains react when habits change.

### Clarity

When going through the change process everything needs to be made clear. To reduce status threat, the roles of managers and leaders need to be made clear.

Goals for change also need to be clear. Vague goals can add to the already existing anxiety, as an employee may not know when they have reached the goal or how they will be evaluated on progress. This means goals need to be specific and measurable.

Companies that have employees write down their goals and review them regularly mean the goals are three times more likely to be clearly understood.

Instead of saying: “Be more productive.”

Try: “Write four reports during the next quarter.”

Or: “Enroll 10 employees in a weekly Employee Assistance Program this month.”

### Continuity

For effective learning, and change, this process needs to be continuous. That means that change does not stop when it is put in place. Companies need to plan for the next change and get feedback about the previous change, what was managed well, what wasn't, what is working and what might be improved further.

The brain often needs time to process new information as much of it is forgotten soon after it is received. If the information is reviewed a couple days after, retention is much higher. Remember plasticity, the more we do things the more the brain cells fire together, the more they wire together. Training, when a new change is being introduced, needs to be spread out and evaluated on a continuous basis in order to maximise the impact and benefit.

## Certainty

Leaders need to express certainty that change will occur and certainty that the company and they will continue to succeed. Information about these facts should be shared with employees as often and as regularly as possible to reassure them that their jobs are safe. This feeling of safety and assurance will lower the threat alarm in the brain. Communication and the feeling of safety will keep [employees engaged throughout the change](#) process, increasing its chance of success.

## Consistency

Effective change, like in the bike riding example given earlier, requires consistency. There are some theories that it takes one month to form a new habit, but there is no research that evidences that.

Change comes easier when it is done consistently, frequently and in small doses. A leader may want to make big changes in the company, but if they try to go for the end goal at first, the change may be too complex. A stepped approach to change is easier and more likely to be adopted more quickly. If possible, when it comes to change programmes and business transformation, think incremental changes and evolution rather than revolution.

Leaders need to make changes that are so small that they are easy to accomplish and become habits fairly quickly.

For example if leaders want to institute a change where employees now have to interact and post content in an online forum at least three times a day, it may be unreasonable to expect all employees to make the change by stating it in that way.

To break the task down into smaller pieces, have employees log in once a day, then read a post once a day, then create a post once a day, and so on until the end goal is reached.

## Co-operation

Because the brain is a social organ, people can find comfort in their relationships with others. Leaders can provide extra opportunities for employees to nurture teams and groups formed at work. Leaders can also work with employees to involve them in the change itself. Employees are much more likely to adapt to the change if they feel they are part of the solution consideration and decision making process.

## Confidence

Many people may feel out of control and helpless when the company is changing. This feeling can cause an increase in anxiety and potentially even depression. To counteract these feelings, leaders need to instill confidence in their employees. They need to show them that they are still in control and have choices to make.

## Communication

Communication is key when it comes to change. Employees want to feel that they have a voice and that it is being heard. Allow employees to contribute, to complain, share opinions, be constructive and be a part of the change as much as possible for it to be successful. Leaders need to show empathy during a stressful time and connect to employees on an emotional level.

This communication can take any number of forms such as surveys, focus groups, feedback sessions, open forums, or individual interviews and reviews.

Change may not be easy, and it may take some time, but successful, long lasting change needs to be done with the brain in mind. And in most cases of introducing change, the brain does not work as quickly to adapt as we might want or expect it to.

## Start Using Neuroscience in Your Workplace

As this information and research sinks in, two questions form in the mind of many managers or HR professionals, and they are: How does this translate into my everyday activity and how can I use neuroscience in a practical way? Here are some starting points:

### Turn the Business into a Story

Stories help us connect with other people. When the brain is activated by a story through emotion, oxytocin is released. This neurotransmitter helps to form connections in the brain that help us build trust and bonding. The release of oxytocin through emotional stories also help us empathise with others. These stories can help teams connect and help employees connect with the company mission and purpose. The 'Why' the organisation exists.

Leaders can use analogies, metaphors, or even classic themes in literature like the hero's journey to illustrate how the company has evolved, overcome challenges, and become what it is today.

Dan Gilbert, the founder of Quicken Loans, has a [unique way](#) of doing this. He has created a company culture that is based on engagement. He shares the story of the company through a book that he wrote and updates annually. It explains the company's values, principles, and expectations. He communicates this story by personally leading orientation sessions for all employees.

### Get Them to Tell Their Own Story

Employees also often have stories about themselves and their work performance. Help them build a better connection with the company by having them tell their story of where they fit in and what motivates them.

In response to the importance of stories from the company, employees at Quicken Loans often offer stories of their own. Many employees personally write to Dan, telling him how a job in his company has changed their lives and what it is about the company that has impacted them so significantly.

While no employee (or company for that matter) is perfect, it is important to help the employee create an overall positive story about their work performance. This starts with avoiding blaming and shaming language. It also includes sharing positive statements along with negatives.

[Research](#) has found that, for optimal performance, it is important to balance every negative comment or criticism with around 5 positives.

## Keep it Comfortable

Most of us have probably had the experience of something in our environment either helping us focus or distracting us from something we were doing. It is important to create a workspace that allows people to focus. Different strategies for improving the space may include cleaning up office clutter, reducing crowding by increasing the space between workstations, providing private spaces for more complex tasks, making comfortable seating and ergonomic office products available, and helping people organise their physical spaces as well as their virtual and electronic spaces.

A mind that is made more relaxed by a comfortable, safe, and structured work environment is a more productive mind.

## Make it Fun

When trying to change employee behaviour or teach people new skills, fun is an important aspect of the equation. Using games and experiential learning can activate emotions and thoughts. This type of learning can create multiple pathways and increase connections in the brain as it activates the body, the limbic system, and the information processing aspects of the brain. Activating multiple pathways helps people focus and retain information better.

Companies like Zappos and Google are known for [how fun](#) they try to make work and how much they encourage friendships.

Overall, they are trying to improve engagement and company culture using the social brain. Learning and change management can also use relationship, fun, and the social brain to improve results. Leaders can facilitate this by:

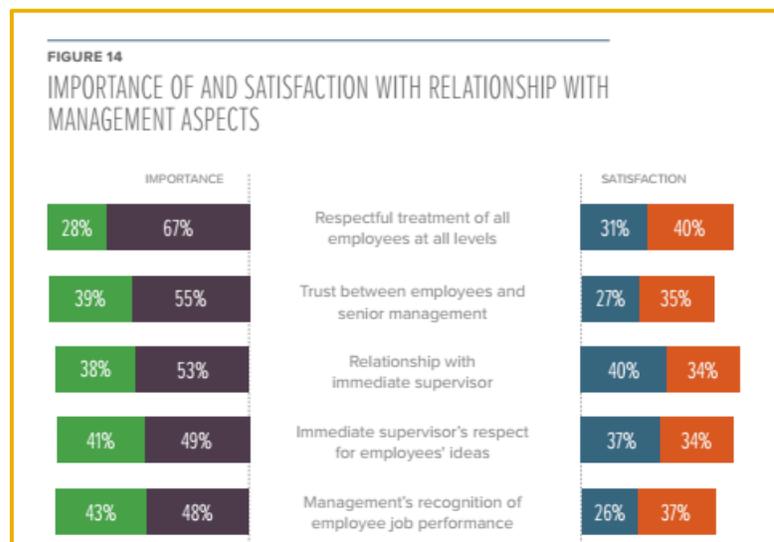
- Creating hypothetical work situations
- Roleplaying different scenarios
- Using fun videos, songs, or movie clips
- Finding hands-on exercises that reinforce skills
- Using a gamification approach to review learned information

## Stay Structured

In order to ward off the threat signals in the brain, leaders need to be consistent in how they behave and how they create the office environment. Leaders should apply all rules and expectations equally, exhibit coping, and treat employees fairly. They should prepare employees for changes in the company and the physical work environment and provide them with strategies to adapt to the changes.

The brain is less likely to stay on high alert when the environment is regarded to be predictable and safe.

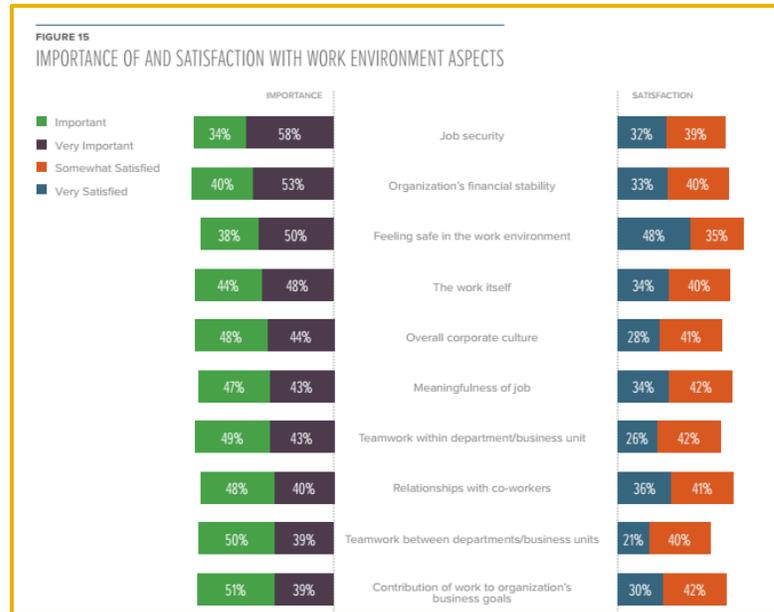
As shown in this graph created for the 2016 [Employee Job Satisfaction and Engagement Report](#) by The Society for Human Resource Management, respect, trust, and relationship are some of the top factors influencing job satisfaction.



In the same report, we see again that feelings of security, safety, and stability are very important factors when looking to create satisfied employees.

Structure comes from the physical environment, the company culture, and the leaders that express and control both. When all three are valued, satisfaction and engagement improve.

## Let Them Speak



Some leaders may be cautious to let their employees speak freely about the company, but employees are already talking, you may just not know about it. With the rise in popularity of employee led reviews on websites like Glassdoor their experience as an employee good or bad, is available for the world to see. These reviews, however negative or positive may have a significant impact on your employer brand and reputation as a potential place to work and therefore the success of your recruitment efforts in attracting as well as retaining key talent.

Providing employees with an open forum where they can raise issues will help improve emotional intelligence, empowerment, and provide opportunities to talk about conflict resolution and coping mechanisms. Employers can create this type of atmosphere by encouraging some simple, yet effective, practices.

- Create an open door policy where employees can address any concerns with leaders
- Hold discussion sessions where employees can come together to talk about issues
- Create a suggestion box or use online surveys
- Offer lunch times with management
- Acknowledge and reward open discussion and change through larger forums or communication platforms

## Encourage Healthy Eating and Behaviours

Companies can help promote brain health by helping employees have better overall physical and mental health which improves their personal life as well as their professional one helping them perform better in all aspects of their life.

The [different foods](#) we eat can have a positive impact on brain health so providing healthy snacks, having seminars or talks about health topics, providing or incentivising gym memberships are all ways to help employees have better physical, mental, and cerebral health.

## Get Moving

Many companies are now including exercise in their daily work routines. This can be as simple as having a walking meeting or providing employees with standing desks or fitness ball seats. Employees in many companies [feel more effective](#) when given the opportunity to take breaks and get some free time to get up and move.

In the early 2010s the Welsh Ambulance Service began focusing on using neuroscience to improve company practices.

Their motivation is based on movement: *“The neuroscience says if you do some exercise, if you don’t just sit still in your meetings and in your work life, it will really help you be more effective.”*

They now actively encourage people to move around during meetings and work sessions. They want people to get better results, so they say: *“Look, if you’re getting the same results it’s not working for you, move and try a different seat.”*

## Create Shared Experiences

Bringing people together in both teams and as an entire organisation promotes bonding and wholeness within the organisation. Having a shared experience gives people a sense of belonging to the group. The

social brain is activated, oxytocin is released, and employees feel like a part of the group and the group's mission. Ultimately, they feel more motivated and engaged.

[Being able to relate and feeling understood](#) are vital to feeling part of the group. Shared experiences do not have to be major events. Often people can feel connected even through day to day experiences.

- Some companies schedule social outings to a movie, a park, or a sporting event.
- Some provide games rooms or special luncheons to encourage camaraderie.
- Some create small celebrations to bring people together.
- Share success and make positive experiences memorable.

Hoopla TV finds that as companies grow and expand it is more difficult to meet face-to-face. They [use technology to create a shared space](#) in which employers and employees can interact through digital means by sending images, videos, news, opportunities, celebrations, and other important updates.

## Have Time for Reflection

When teaching employees new skills or giving them tasks, build time in for reflection. The brain handles work and information best when it is in short bursts. For improved retention of knowledge or work performance it is important to give the brain a break from technology or other distractions to allow the pathways in the brain to be reinforced through reflection of what was learned or how the job task was performed.

Telecommunications company BT Group, have seen improved results with the conscious use of reflection time.

The Director of Development at the time stated, *"We looked at neuroscience when we were structuring learning experiences, for example how much people will take on, creating an "aha" moment of inspiration, making it social, the amount of reflection that they need to consolidate learning and so on. ... Most of the time was dedicated to reflection in small groups, in planning and practicing and turning what they'd heard into personal sense, skills, and plans."*

The changes in the company were based on 'learning about the conditions under which the brain makes new connections and how you reinforce those connections'.

## Teach Them the Science

Helping employees learn and understand the neuroscience principles can help them use these principles more frequently. At times people are not willing or able to do something unless they have reasons as to why they are doing it. People often do not like change. Even people who don't mind it probably have to work hard to calm the panic that change can produce in the brain. When trying some of these techniques, make sure employees have a choice and know the reasons why these things are important.

## Take Control of Your Hormones

The two hormones, cortisol and testosterone, create a [delicate balance](#). When testosterone is too low, people can be perceived as weak or lacking in confidence. Too high and they lose the empathy skills for creating collaborative and productive teams.

When cortisol is low, leaders are able to manage and lead even under pressure. Too low and they may not have the physical and mental reactions to respond to stress effectively. Too high and they are overwhelmed by stress and are less productive. Here's a more detailed overview of how these scenarios translate into behaviours:

- **Low Testosterone/ Low Cortisol** – This type of person may not exude strength and confidence but will probably appear calm and relaxed. Too little cortisol and they might not respond to stress quickly and strongly enough to cope with it effectively.
- **High Testosterone/ Low Cortisol** – This type, the most effective leaders in the study, are able to exhibit confidence and strength, while also being able to act quickly and successfully under pressure.
- **Low Testosterone/ High Cortisol** – This type of person does not seem to be confident but is probably overstressed and anxious.
- **High Testosterone/ High Cortisol** – This type of person may be in a leadership position, but may also have a difficult time handling stress. They may seem pressured, scattered, or maybe a bit aggressive when dealing with stress.

These behaviour types may be familiar to you based on yourself or leaders or colleagues you know. It is important to think about how we may fall into these states across our lives, as hormones can affect our behaviour, but our behaviour can also affect our hormones. In other words, your hormone profile can be changed. These profiles are not constant and do not make or break you as a leader.

Here are some practical ideas to help you find the right balance:

### Mindfulness

Mindfulness is a buzzword lately, but learning to focus on the present and letting worries and stresses go can decrease cortisol and make us more relaxed.

### Diet and Exercise

Having a more plant-based diet, full of whole foods, can improve testosterone and lower cortisol levels naturally.

Add more cruciferous vegetables, garlic, and nuts to the diet, while eliminating processed sugar and alcohol. This is a good start to balancing hormone levels.

Exercise for about 30 minutes a day. This will reduce cortisol levels and overall feelings of stress.

### The Power Pose

There is a pose, often referred to as the superhero pose, that has been shown to increase testosterone and decrease cortisol. The pose requires people to stand like a superhero: standing tall, feet apart, hands on the hips, chest out.

### Social Skills

People who are skilled in [emotional intelligence](#) and people skills are better able to collaborate and communicate with others. The support of others and the hormones released when feeling part of a group can help us handle stress and decrease cortisol levels.

### Think and Talk Differently

Everyone deals with stress one way or another, but it seems that the way we think about it and the way we talk about it make a difference. If we are looking at a big task, we can say that it is overwhelming, or we can reframe it and call it a challenge. By changing the language we use to describe the situation, we can actually change how our bodies respond to it.

This paper is a just a starting point for helping to create a work culture and environment that is based around what is healthy for the brain. Companies who ignore how the brain functions are unnecessarily leaving a lot to chance. Sometimes things might be great, but then something can happen and they might worsen. Having a brain-based work environment can help leaders effectively navigate the rise and falls in the economic climate.

Be a brain-based leader by helping the people improve the work environment, and the environment improve the people. Both influence the other and, in a working system, there will be an upward spiral of motivation, growth, and productivity. Overtime, this environment will actually change the brains of the people in it, making the team and the organisation better able to adapt to change.

## About Engage & Prosper

Engage & Prosper is a UK based privately owned Employee Engagement Consultancy and Social Enterprise, on a mission to help organisations develop a highly productive and fulfilling workplace culture, together with their people, through enhanced employee engagement strategies, fabulously effective internal communications and tailored reward and recognition programmes.

For more information on Engage & Prosper or to discover how we can help you achieve your organisational and people goals, find out more about what we do at [www.engageandprosper.com](http://www.engageandprosper.com)



## About Hppy

This eBook was developed in conjunction with Hppy.

[Hppy](#) is an employee engagement insights platform, providing leaders and HR managers information, data and ideas for creating better workplaces. They provide content and services that support leaders to be more efficient in designing, implementing and understanding employee engagement strategies.



## Resources:

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