Aims and Scope

The *NHRD Network Journal* is the official publication of the National HRD Network. The aim of the journal is to compile and publish the research and professional views and experiences of reputed HR professionals, line professionals, CEOs, researchers and academicians in different specialised areas. Extensive research is carried out to identify themes of current interest to HR fraternity for each issue. Each issue is guest-edited by an expert in the concerned theme area.

The scope of the journal includes multiple HR-related themes: IT in HR, performance management, attracting and retaining talent, career management, women in corporate leadership roles, work–life balance, human resources management in rapid growth organisations, etc. The journal continuously strives to generate new knowledge in HR by thriving active collaboration between practitioners and academics.
Managing Editor

Pallab Bandyopadhyay, National HRD Network, Gurgaon, India

Editorial Board

Arvind N. Agrawal, National HRD Network, Gurgaon, India
Saptarshi Roy, National HRD Network, Gurgaon, India
Ritu Anand, National HRD Network, Gurgaon, India
R. Anand, National HRD Network, Gurgaon, India
Dhananjay Singh, National HRD Network, Gurgaon, India
Contents

Special Issue: Neuroscience and HRM

Guest Editors: Gopal P. Mahapatra and Shruti Tewari

Editorial

Guest Editorial

Articles

Neuroscience of Leadership and Coaching

Social Neuroscience and HR: An Introductory Perspective
Shruti Tewari and Gopal P. Mahapatra

Neuroscience Underlying Personality Traits, Spiritual Transcendence and Leadership Styles
Rajshekar Krishnan

Grow, Perform and Change Using Neuroscience
R. Anand

Neuroscience in HR: Steer and Take Charge
Sajan Mathai and Aparna Anna Mathai

How Neuroscience Transformed Business: The TCS Story
Smita Affinwalla, Ranjan Bandyopadhyay and Ashmeeta Chugh

Leadership Development Through Change Management: A Neuroscience Perspective
Kiran C. S. and Parul Tripathi

Neuroscience and HR Concepts and Applications
B. S. Rao
Applications of Neuroscience in Coaching
Piyush Dixit and Prachi Dixit

Managing Emotion Through Neuroscience

Applications of Neuroscience for Managing Affective State at Workplace
Sonia Baloni Ray

Neurological Underpinnings to Understanding and Dealing with Stress at Work
Mousumi Padhi and Kalpana Sahoo

Awareness of Employee Stress Response: How Employers Can Mitigate Workplace Burnout and Workplace Depression
Tony Deblauwe

Happy Hormones at Work: Applying the Learnings from Neuroscience to Improve and Sustain Workplace Happiness
Sambit Kumar Ghosh

Book Reviews

David Rock, *Your Brain at Work: Strategies for Overcoming Distraction, Regaining Focus, and Working Smarter All Day Long*
Reviewed by Gyanendra Pandey

Tara Swart, Kitty Chisholm and Paul Brown, *Neuroscience for Leadership: Harnessing the Brain Gain Advantage*
Reviewed by Gautham Ananda Kumar

Amy Brann, *Engaged: The Neuroscience Behind Creating Productive People in Successful Organisations*
Reviewed by Samyak Raj Mehta

Suggested Reading

Suggested Readings on Neuroscience and Its Application in HR
Amruta Londhe

Visit http://journals.sagepub.com/home/nhr
Free access to tables of contents and abstracts.
Neuroscience as a subject has found its application in many functional areas today in the organisational context. So it is quite natural that many organisations today are embracing its techniques and ideas. Application of neuroscience in understanding the human behaviour is becoming an emerging field of practice among Human Resource (HR) professionals. Today, it is mostly learning and organisational development (L&OD) functional specialists among HR professionals who have started using knowledge and application of neuroscience to engage their customers in a more engaging way.

So what is neuroscience and how do we describe it to HR professionals? To me, whatever little I have known suggests that it is a very diverse field covering a vast area of brain functioning. The major areas which have got momentum in terms of research interest in recent times include the study of brain development, learning and memory, the senses, sleep and stress.

It might not be out of the way to quote Stanley Benjamin Prusiner, an American neurologist, biochemist and also a Nobel laureate, to sum up how important neuroscience is going to be in the future of humankind when he said, ‘Neuroscience is by far the most exciting branch of science because the brain is the most fascinating object in the universe. Every human brain is different—the brain makes each human unique and defines who he or she is’.

I first got exposed to the application of neuroscience while getting trained for coaching about 10 years ago, where I learned about the SCARF model propounded by David Rock. Dr Rock is perhaps one of the pioneers in neuroleadership, who found the application of neuroscience in studying leadership and also applying concepts derived from neuroscience in coaching practices. The SCARF model is defined as a ‘brain-based model for collaborating with and influencing others’. It outlined a number of domains of human experience (status, certainty, autonomy, relatedness and fairness), around which our perceptions activate different areas of the brain. This determines how individuals react, stimulating either a ‘reward’ or ‘threat’—or ‘fight or flight’—response.

And then I read Quiet Leadership by David Rock. Supported by the latest research in neuroscience, the book introduced me to a brain-based alternate approach that can radically improve the performance-management ability of leaders in modern-day organisations.

In my own quest to understand neuroscience concepts better, I read another remarkable book The Tell-Tale Brain by V. S. Ramachandran. Ramachandran, a neuroscientist, known primarily for his work in the fields of behavioural neurology and visual psychophysics, is currently a Professor in the Department of Psychology and the Graduate Program in Neurosciences at the University of California, San Diego. Published eight years ago, this book opened a new area of interest for me. This book taught me many concepts of brain functioning. This book gave me a completely new insight into the process of human brain evolution. Through this book, I came to know that human brain evolved through two methods: biological evolution, which takes a long time, and cultural evolution, which is incredibly fast by comparison. I would strongly recommend this book for anybody who is interested to know about neuroscience.
Since last few years, it has become abundantly clear that neuroscience applications in the field of HR are increasing at a rapid pace. To quote Peter Cheese, the Chief Executive of Chartered Institute of Personnel and Development (CIPD), UK:

Neuroscience is now adding further weight and even more analytical science to the understanding of people. Functional magnetic resonance imaging (fMRI) is allowing us to better understand how the brain works, how we learn, respond to stress and encouragement, to threat and reward. It has become a huge field of research and is in some cases challenging some of our long held beliefs. It is being increasingly cited and used in fields as diverse as politics, marketing, as well as in to HR. Our challenge as practitioners is to make sense of it, not to get too lost in the deep science but to understand the insights it brings and how we can apply the learnings.

It is certain, therefore, that the interest in the application of neuroscience in the field of HR is going to increase over the years. Many practitioners and subject matter experts whom I met in the recent past claimed that they are seeing strong interest in the use and application of neuroscience concepts and tools in the field of HR.

There is another viewpoint that I am hearing from HR professionals these days. It is the profound changes that we are witnessing in the way some enlightened and innovative organisations are changing the way they are implementing some of their most important people management processes such as performance and reward management. The HR professionals in many of these organisations have been able to alter some of the long-held views of senior leadership by leaning on the latest findings of neuroscience research. Today, it is adding scientific rigour to many views on people management that HR professionals have long been struggling in articulating and influencing their business peers. That people respond in different ways and that putting people in high-pressured situations tend not to deliver the best results are believed by many organisation leaders today, simply because they have better scientific insights into human brain functioning.

As HR professionals, we are well aware of the VUCA (volatility, uncertainty, complexity and ambiguity) environment that every organisation has to scale through. In this environment, innovation and agility are no more buzzwords today; instead, they are vital to surviving disruptions for organisations. It is in this context, I believe, neuroscience-aided concepts and tools are going to play a very key role in the future of people management systems and processes inside modern-day organisations. Fifteen years ago (in 2003), a group of three researchers, N. I. Eisenberger, M. D. Lieberman and K. D. Williams, conducted a neuroimaging study and showed the whole world that social exclusion creates social pains that are similar to those of physical pain. Whilst social pain may feel different, just as the pain of a stubbed toe feels different to stomach cramps, the networks processing it in the brain are the same. This breakthrough study proved that one of the fundamental ways in which our brain is wired is that we move away from threat and move towards reward. You can imagine how breakthrough insights such as this, provided by social neurologists, can be extremely valuable for HR professionals to design apt interventions that facilitate creativity and innovation in today’s organisational context.

Before I elaborate more, I would like to quote David Rock from his book, Your Brain at Work, when he said:

Without this ability to stand outside your experience, without self-awareness, you would have little ability to moderate and direct your behaviour moment to moment. Such real-time, goal-directed modulation of behaviour is the key to acting as a mature adult. You need this capacity to free yourself from the automatic flow of experience, and to choose where to direct your attention. Without a director you are a mere automaton, driven by greed, fear, or habit.
Finally, I would like to thank Professor Gopal Mohapatra (formerly of IIM Indore and who has now moved to IIM Bangalore) and Professor Shruti Tiwari (IIM Indore) for guest editing this important issue. They responded to my request with full commitment to deliver this issue on time. They took all the pains to first invite contributors, coordinating with both the practitioners and the academicians continuously in spite of their busy schedule and helping in with editorial amendments. A big thank you to both of them for completing their job so meticulously. Not much have been published on this subject in India and therefore kudos again for this pioneering work.

Last but not least, this issue begins with our collaboration with SAGE. From this issue onwards, SAGE will be our partner in disseminating knowledge related to people management through *NHRDN Journal*, not only across the country but also across the globe. This is my duty to acknowledge the relentless support provided by Sangeeta Gupta and her team from SAGE in bringing this issue on time. Nisha Kurup from our Central Secretariat also provided support in coordinating with all the agencies and the guest editors to bring out this issue.

I hope our partnership with SAGE will enhance the credence as well as visibility for the journal for which we all are working tirelessly at NHRDN.

Our next issue (January 2019) will be guest edited by Dr Rajnish Dass on the theme ‘Executive Education in India—Current State and Future Directions for HR Professionals’. I am sure all of you will find it interesting for future read. Those of you are interested in contributing to this issue, please get in touch with him at rajnish@theceei.com

Please continue reading this issue and continue to offer your feedback and suggestions for improving the content and reach of our journal at me@nationalhrd.org

**Pallab Bandyopadhyay**
Managing Editor
Guest Editorial

The world is changing. It is at the cusp of further disruptions leading to transformations. All fields of management including Human Resource Management (HRM) are reviewing and examining their approach to cope, align, steer through and lead in the dynamic environment. HRM in the last two decades has also undergone a thorough and huge transformation, and continuously reinventing and looking for newer ways to address the people management issues in the changing context. Neuroscience is a field which has evolved, grown and still emerging. There appears to be a huge opportunity for leveraging neuroscience for HRM.

The aim of this special issue by NHRD and an inaugural issue by SAGE on ‘Neuroscience and HR: Concepts and Applications’ is to introduce the burgeoning topic of neuroscience in HRM practices and to showcase some of the recent developments and applications of neuroscience in HRM. It also provides a forum to bridge the gap between neuroscience research and practice. Sixteen invited articles from academicians, researchers and practitioners address these broad concepts and applications. The issue includes theoretical accounts with success case stories to depict the relevance of neuroscience in HRM, more so, in the Indian setting.

This special issue is divided into three sections, namely the role of neuroscience in leadership and coaching, managing emotions using neuroscience and book reviews with suggested readings.

To set the context, the editors have presented an introductory article on evolving fields of social neuroscience and captured milestone neuroscientific researches in HR in the past and also looked at the present and future trends. The article discusses various challenges and issues of execution of neuroscience at workplace.

The first section includes articles on ‘role of neuroscience in leadership and coaching’. Rajshekhar Krishnan’s article gives a brief introduction to neuroscientific terminology. He showcases the neuroscientific insights on personality by using the Big Five traits, spirituality, meditation and transformational leadership. In his article, Anand visualises the future of HR in neuroscience. He argues, neuroscience has potential to improve performance, accelerate personal growth and lead change. Sajan Mathai and Aparna present a unique perspective of integrating neuroscience in building resonant leaders with an emphasis on social and emotional intelligence. Relevance of neuro-linguistic programming (NLP) and mindfulness have been emphasised as a tool to manage oneself in the VUCA world.

Demonstrating the success story of TCS, Smita Affinwala, Bandyopadhyay and Chugh show how ‘organisational character’ can be built up by identifying HR solutions already existing in the system, facilitating the organisational effectiveness. They call neuroscience as revolutionary science and recommend the HR fraternity to join hands to bring this revolutionary change in the way one deals with crucial HR issues using neuroscience.

Kiran C. S. and Parul detail the role of mirror neurons, spindle cells and oscillators in leadership development through change management. They make special mention of the work of V. S. Ramachandran on phantom limbs in reference to the neurological explanation of the concept of ‘alternate reality’.
B. S. Rao discusses applications of neuroscientific insights in today’s HR world, specifically in executive coaching, with special mention of two real time case studies. Similarly, Piyush Dixit and Prachi share their experience of executive coaching and establish the value of neuroscience in providing a scientific basis for some old intuitive wisdom through popular concepts such as amygdala hijack, triune brain, mirror neuron, neuroplasticity and happy hormones.

The second section of the journal highlights ‘managing emotion through neuroscience’. It includes four articles on neurological account on managing positive emotion and dealing with stress at work.

Sonia Baloni Ray reviews various forms of emotions at workplace, followed by its implications facilitating organisational productivity. She further argues that neuroscientific researches in an organisational setting have potential to improve the overall affective state of the employee and, thereby, efficacy of the organisation. Mousumi Padhi and Kalpana Sahoo discuss neuroplasticity, and they debate that the brain can be structurally altered through the practice of mindfulness and meditation to develop resilience to stress and deal with it effectively using recent neuroscientific insights.

Tony Deblauwe reviews how one’s ability to inspire employees is particularly important, because followers with low self-concepts are drawn to a highly personalised vision with a special mention of the trust inducing oxytocin. He also discusses eight building blocks to facilitate a culture of trust while mitigating the factors associated with workplace burnout and workplace depression. Sambit Kumar Ghosh explains the neurological accounts of positive emotions at the workplace. He further lists activities and programmes at the workplace to trigger specific neurotransmitters in order to achieve, sustain and maximise happiness at the workplace.

The third section represents book reviews of three best sellers along with the compilation of suggested readings in the area of neuroscience and HR.

This special issue is an attempt to bridge the gap between neuroscientific research and HRM practices and nurture the nexus of neuro–HR to witness the new era of HRM practices.

We earnestly hope that the NHRD Network members and readers will assimilate and apply a few of the ideas of this issue in their professional and academic endeavours.

Gopal P. Mahapatra  
Indian Institute of Management, Bangalore  
Shruti Tewari  
Indian Institute of Management, Indore
Abstract

Human resource management (HRM) has evolved over the years and is constantly adapting to the advanced technologies and research endeavours to address the complexities of the corporate environment and aspirations of the stakeholders. In this article, the authors explain the relevance of neuroscientific research for HRM practices. Interdisciplinary nature and landmarks of social neuroscience and newly evolved discipline of organisational cognitive neuroscience are discussed. The nexus of Neuro–HR has phenomenal research and application opportunities to progress and enhance the quality of HRM for effective organisations leading to a healthier society. A significant use of neuroscience in HRM appears to be an interesting journey full of opportunities and challenges ahead.

Keywords

Neuroscience, human resource management (HRM), Neuro–HR, organizational cognitive neuroscience (OCN)

Introduction

Technological advancement and neuroscience have transformed the way we live, think and work. Using these, medicine science has seen revolutionary advancement in the diagnosis and treatment of maladaptive behaviour and diseases. The precision in diagnosis and treatment has reached an astonishing level. Extending it to social processes and behaviour, social neuroscience (SN) investigates the role of biological systems in implementing social processes and behavioural practices. Brain-mapping studies, particularly within the field of social, cognitive and affective neuroscience have provided underlying insights that can be directly applied to workplace (Lieberman, 2007). Researches on attention, memory, mindfulness, emotional regulation, habit formation, social comparison, prejudice, empathy, social pain, imitation, mirror neurons, fairness, collaboration, social categorisation, persuasion, morality, trust and goal pursuit have high potentials for human resource management (HRM) practitioners.

Corresponding author:

Shruti Tewari, Assistant Professor, J 207, Academic Block, Indian Institute of Management Indore, Prabandh Shikhar, Rau-Pithampur Road, Indore 453556, Madhya Pradesh, India.
E-mails: shrutigyan@gmail.com; shrutitewari@iimidr.ac.in
Social Neuroscience and Allied Disciplines

Neuroscience refers to the scientific study of the nervous system. The nervous system is responsible for process alteration, coordination and adaptation to the environment. Our effective adaptability is a function of how well we are in sync with the environment.

As an interdisciplinary field, SN aims to refine our understanding of humans as a ‘social being’. SN attempts to resolve all possible problems and issues related to human behaviour using the neuroscientific method. Through these methods, we can investigate underlying neural pathways, studying which area in the brain gets activated during specific responses. For example, functional magnetic resonance imaging (fMRI) shows activity in a specific brain area using the metric of blood flow in the brain, electroencephalography monitors the electrical activity of the brain centres and the most recent method called transcranial magnetic stimulation is a non-invasive procedure in which we can stimulate/inhibit a specific area by placing a magnetic coil on the scalp and study its effect on specific responses. Neuroimaging works on the principles of ‘functional connectivity’. It refers to the functionally integrated relationship between spatially separated brain regions (Friston, 2011). By using this principle, SN helps us to understand associations among different emotional, behavioural and cognitive responses based on precise neurometric parameters instead of survey or interviews. Social desirability and response bias are not an issue when we use the neuroscientific method. Many academic centres in India have neuroscientific research labs (e.g., National Brain Research Centre [NBRC], National Institute of Mental Health and Neuro-Sciences [NIMHANS] and Centre of Behavioural and Cognitive Sciences [CBCS] at Allahabad University so on and so forth). The advance technique and analytic precision come from expertise. Therefore, these methods can only be used by trained experts such as neuroscientists or behavioural/cognitive scientists. However, the insights from social neuroscientific researches are available in the form of academic journals, books and magazine articles. With conceptual understanding, these insights can be translated into testable hypothesis and training programmes.

SN gave rise to associative interdisciplinary fields such as organisational cognitive neuroscience (OCN) and consumer neuroscience (CN). CN has become a well-established field that uses neuroscientific methods to study consumer decision-making, advertising and branding so on and so forth. On the other hand, OCN was introduced in 2007 in the special issue of the *Annals of the New York Academy of Science* (Butler & Senior, 2007). OCN was established as an applied form of SN. OCN refers to the field that applies neuroscientific methods to analyse and understand human behaviour within the applied setting of organisations at various levels—from micro to macro. It combines all the fields of behavioural sciences with business and management.

![Figure 1. Interdisciplinary Fields to Study HRM Practices Using Neuroscience](image-url)

*Source: The Authors.*
OCN is not limited only to the demonstration of neuroscientific evidences for existing theories, but it also goes beyond that and incorporate the knowledge of brain systems to develop new hypotheses about relevant organisational issues, including HRM.

**How SN/OCN Can Leverage HRM Practices?**

Human resources are one of the essential resources for organisations. To adapt with rapid changes in the volatile, uncertain, complex and ambiguous (VUCA) corporate environment, HRM practices need to be progressed with time and technology. The history of HRM highlights its evolution, sustainability and transformation in alignment with the changing times and stakeholder expectations (Ulrich & Dulebohn, 2015). HRM has gone through a long evolutionary process. The field has seen radical changes, starting from industrial revolution, where employees were perceived as means to economic gains to perceiving employees as valued resources—having heart and mind with focus on the holistic growth of the employees. According to D. J. Cohen of Society for Human Resource Management, ‘HR’s past is relatively long and humble. The present is both positive and challenging, and the future of HR presents the profession with opportunities and even more thought-provoking challenges’ (Cohen, 2015).

The typical cycle of the HRM process and subprocesses starting from talent acquisition to exit can be pictorially represented simply as shown in Figure 2.

![HRM Processes Overview](image)

**Figure 2.** HRM Processes Overview

**Source:** The Authors.
The HRM processes can be broadly classified into seven stages: starting from talent acquisition, socialisation and training, on boarding, performance management (PM), capability development, reward and recognition, and fostering employee relations in order to prepare the employee for a comfortable separation from the organisation. On the basis of these HRM processes, understanding of human cognition and behaviour becomes a stepping stone to effective HRM practices. Growing neuroscience researches and initiatives have made noteworthy advancements in the understanding and prediction of human cognition and behaviour. Neuroscientific methods and analytics add tremendous opportunities to explore the unsolved puzzle of HRM. OCN provides fertile opportunity for research on various organisational theories and practices which can be directly applied by practitioners. One of the offshoots of OCN has been translated into leadership consultancy and coaching. David Rock (2008), the founder director of the NeuroLeadership Institute, not only popularised the term ‘NeuroLeadership’ but also brought neuroscience from academic journals to practices at the workplace. His ‘brain-based model of collaborating with and influencing others’ emphasises five domains of experience and responses crucial for both individual and organisational effectiveness. These domains are status, certainty, autonomy, relatedness and fairness, commonly known as ‘SCARF’. Status is defined as relative importance to others, certainty as tendency to predict the future, autonomy as the sense of control over events, relatedness as relations with others and fairness as the perception of equality. Rock advocates creating SCARF profiling to assess relative importance and value distribution of these domains. People vary on these domains. For example, status may be more important for one, whereas others may give more value to relatedness. Rock explains the use of SCARF profiling for both individuals and organisations to promote effective social interactions through stimulating these drivers of reward or threat centres (Rock and Cox, 2012).

This model is based on insights into long-standing social neuroscientific researches on emotion, motivation, decision-making and performance. The roots lie in Walter Cannon’s (1915) work on ‘bodily changes in pain, hunger, fear and rage’. He discussed ‘Flight or Fight’ responses leading to the legacy of the ‘approach and avoidance motivation’ literature. Survival and effective adaptation depends on choices we make: approach or avoid. Neuroscience has investigated the biology behind approach-avoidance responses. Strong empirical evidences support that our brain reacts differently towards ‘threat’ or ‘reward’ stimuli from the social and psychological environments (Gordon, Barnett, Cooper, Tran, & Williams, 2008).

In an organisation, the way we communicate information, the way we interact with others (including the leader) and the way others interact with us do matter. These do matter because they trigger either threat or reward centres in our brain. Neuroscientific researches have discovered around 30 such centres commonly known as neural networks. The neural network refers to a functional unit that comprises brain areas responsible for specific tasks. Neuroscience leverages our understanding of specific cognitive, emotional and behavioural responses through studying these neural networks. Some of the neural networks popular in management are control, reward, affect, default and strategic. Insights into functioning and association of these networks can provide a rich understanding of effective performance. The discovery of two contrast networks, default and control networks, proves to be remarkable in redesigning physical and psychological infrastructures of global organisations. The default network, which is activated in free time but does not sleep, also known as the zoning out network, is associated with creative and innovative thinking and the control network, which is activated when directed to a task, is associated with goal-directed performance (Waytz & Mason, 2013). This discovery inspired Google to provide the policy of ‘free time’ for employees and Twitter to introduce ‘Hack Week’ to think creatively without any directives. These insights are proven to be a helpful basis for developing new hypothesis, recommendations and training programmes for people management in order to make organisations effective.

In the area of PM, the complexities have grown with increased expectations and challenges. Neuroscientific insights have revealed that the number-based PM process is complex and obsolete.
Rock, Davis and Jones (2014) discovered two problems with the PM system. The first problem is the evaluation of people with any numerical rating or ranking which sometimes creates a bias or discrimination in the judgement. The second problem belongs to the people with a fixed mindset which holds them back; it gets in the way of learning and growth. He called it a ‘mental paralysis associated with a fixed mindset’ responsible for lowering down performance. Neuroscience recommends PM models which in turn cultivate trust, satisfaction, engagement and retention to engage employees and reduce conflicts (Rock, Davis & Jones, 2014).

Employee engagement has been gaining greater attention in the 21st century given the technical and socio-political disruptions. Neuroscientific methods can help an emergent leader in determining the level of employee engagement during the team processes in organisations. According to Waldman et al. (2013), individuals were assessed neurologically to determine the higher level of individuals and team engagement in the course of emerging transformational leadership. Neuroscience theory helps leaders in recognising the pattern of employee’s behaviour and also enables the leaders to transform knowledge into positive behavioural change, which in turn enhances the effectiveness of coaching (Rock & Donde, 2008). Research also highlights the importance of meaningful work associated with employee’s intrinsic motivation, which in turn boosts the level of performance, emotions and engagement. It appears that neuroscience can help organisations to discover the drivers of motivation, engagement and performance.

In a series of fMRI studies, Boyatzis, Jack, Cesaro, Passarelli, and Khawaja (2010) showed that resonant leaders activate specific neural pathways in their employees’ brains that encourage engagement and positive working relationships. In another fMRI study, Boyatzis et al. (2012) interviewed senior executives and asked them to recall their critical past incidences and associated interaction with resonant and dissonant leaders. After few weeks, brain mapping of these executives was done through fMRI. They responded simple questions related to critical episodes they recalled in interviews. Results showed that specific neural circuits of the executives’ brains were activated when they recalled their interaction with resonant leaders. These circuits have been shown to be involved in the mirror neuron network that gets activated when a person imitates another’s actions. Completely different neural pathways were found to be active when executives were responding to questions based on events with dissonant leaders. In this case, the social network was significantly deactivated or suppressed. It reflects that recalling interactions with resonant leaders revives a person and puts him/her back into a positive and open mindset, associated with relationships, creativity and approach motivation. Such empirical evidences are important and precisely define underlying reasons for creating positive culture in an organisation. As Schaufenbuel rightly pointed out:

Neuroscience findings are helping to connect the dots between human interaction and effective leadership practices. As the mapping of the human brain continues, we can expect to learn more about how the brain functions and how leaders can use this knowledge to best lead people and organizations. (Schaufenbuel, 2014)

A big chunk of neurological studies emphasised the role of attention, emotion and habits on HR practices. The operative use of these cognitive processes in HRM can be tested and understood by combining existing neuroscientific insights and HR-focused studies. Collaboration has been considered the key to optimal human and organisational functioning. We are social animals and have innate predisposition to work in a group. Neuroscience claims that the innate collaborative human nature needs to be preserved by filtering negative and threatening stimuli from the organisation. A genuine and positive environment may lead to collaborative behaviour incorporating a collective gain. Neuroscientific evidences suggest that stress and anxiety management (Robertson, 2017), creating a fear-free organisation (Brown, Kingsley, & Paterson, 2015) and building trust (Zak, 2017), can significantly contribute to change management in the organisation.
Challenges and Issues

Can neuroscience affect the way we actually work in an organisation? We have just started unfolding the brain mysteries. Still a long way to go in order to explain complex group interactions using neuroscience. The universal appeal of neuroscientific methods has potential to resolve HR issues in global organisations. The wide range applications of neuroscience in HR comes along with challenges in execution. There are twofold challenges and issues related to the use of neuroscience in a workplace. The first challenge is dealing with myths associated with the term ‘neuroscience’. More and more awareness need to be spread about what is neuroscience and how organisations can be benefited by neuroscientific insights. HR leaders need to have conceptual clarity on how to interpret neuroscientific data. It is not possible without having specific knowledge of minute details of any of the neuroscientific methods. The second challenge comes up when an organisation wants to solve unique HR problems specific to the organisation using these methodologies. The solution lies in recruitment, training and collaboration with experts who can come up with tailor-made solutions of HR problems for specific organisations. It does not mean that every HR personnel need to have neuroscience training or a degree in it. The expertise can be outsourced through collaborating with neuroconsultancy firms or neuroscience experts. Another way is to start a neuroscience analytics department in the organisation. Most of the MNCs including Google, Apple, PepsiCo and Amazon have started the neuroscience research wings in their organisations. Another way of enhanced applications of neuroscience in selection, engagement and capability development (training) could be acquiring neuroscience certifications by HR practitioners—the way it has been extended in coaching. The gap between academia studying neuroscience and HR practitioners who can directly get benefited from the knowledge of neuroscience need to be abridged.

However, neuroimaging analytics have huge potentials for practice, use of these methods are also subject to ethical consideration. The balance and strict ethical consideration is responsibility of the organisations and researchers and it need to be taken very seriously. The declaration of Helsinki (World Medical Association, 2013) safeguards the ethical principles regarding human experimentation. The way it is mandatory for researchers and academics to go through the ethical approval process before starting data collection, such regularisation need to be maintained for practitioners who want to use human experimentation. Joint efforts from academics and practitioners will be adequate to address issues related to ethical and legal aspects of neuroscientific experimentation in theory and practice. Hence, significant use of neuroscience in HRM appears to be an interesting journey full of opportunities and challenges ahead.

In summary, to the authors, leaving the dry essence of cellular explanation of biological science, SN and organisational cognitive neuroscience have already extended to the areas of leadership, innovation, trust, mindfulness, stress at workplace, workplace wellness, coaching, employee engagement, change management and the like. The nexus of neuro–HR has phenomenal research and application opportunities to progress and enhance the quality of HRM for effective organisations, leading to a healthier society.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.
Note
1. The views expressed in this article are authors’ own and not necessarily that of the institutions they work for.

References


Authors’ Bio-sketch

Shruti Tewari is currently working at Indian Institute of Management, Indore, as Assistant Professor (Psychology). She holds a D. Phil. degree in Psychology from University of Allahabad. In 2010, she took up post-doctoral fellowship (as Research Director) in an Indo-British Collaborative Project on Social Identity and Collective Participation at Magh Mela funded by Economic & Social Research Council, UK. Her area of specialisation is social cognition, specifically exploring how we make sense of the world using social cognitive processes. Her research employs mixed-methods, combining qualitative methodologies with survey and behavioural experiments. She has received national and international research grants and has published in international journals and books. She also conducts MDPs with special focus on analytics using neuroscience in HR and marketing.

Gopal P. Mahapatra is a Professor of Practice, OB & HRM at IIM, Bangalore. Prior to this he was a Professor of Practice, OB & HRM at IIM, Indore. He has more than 30 years of corporate consulting and academic experience in leading organisational transformation, talent and leadership development, executive coaching, career management, assessment and development center and strategic HR. He has done extensive work in executive coaching and 360 degree feedback coaching for more than 1,800 top and senior leaders in MNCs and private companies. He has been involved in more than 50 integration programmes post-merger and acquisitions. He did his Doctoral Programme (Fellow in Management) from IIM, Bangalore and Post-Graduate in Personnel Management and IR from Xavier Institute of Social Service, Ranchi. He is educated in coaching by Prof. Marshall Goldsmith. He is a Certified Executive Coach by Results Coaching (David Rock) and Ericson Coaching and is also certified by Future Search, PDI, Mercer and MBTI (by APT). He is trained by London Business School in Strategic HR, and Total Quality by JUSE, Tokyo. He was President, National HRD Network, Bangalore, and is currently Associate Editor, South Asian Journal of HRM published by SAGE.
Neuroscience Underlying Personality Traits, Spiritual Transcendence and Leadership Styles

Rajshekar Krishnan

Abstract
After a brief introduction to the basic terminology of neuroscientific investigations, this article showcases the findings of neuroscientific investigations into each of the traits of the five-factor model of personality (FFM), namely openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. It further presents the findings of research on spirituality and meditation (S&M), and finally focuses on the neurological findings with respect to transformational leadership (TL). The article concludes with juxtaposing neurological research findings with behavioural research findings of FFM, S&M and TL, thereby opening up possibilities of hypothesis articulation for further research.

Keywords
Neuroscience, personality, spirituality, meditation, leadership

Why Am I Writing This Article?

This article represents the continuity of my research interests that eventually led to my doctoral work on ‘A study of personality traits, spiritual transcendence and Leadership styles in India’ (Rajshekar, 2012). I would have loved to study the neuroscience underlying the research variables when I embarked on my journey; however, including it would have widened the scope of work beyond the available time and resources at hand. Therefore, I decided to study only behavioural aspects of personality traits, spiritual transcendence and leadership styles.

Since the completion of my doctoral program, I have had the benefit of continuing in my profession as a Learning and Organisational Development Officer. This has led to a practitioner’s insight into minds of entry-level employees, team leaders, middle-level managers, senior executives and leaders in organised corporate sectors. In this article, I am blending in some of the interesting findings of neuro-behavioural modelling with some practical and potential applications of the same.

1 Wayda Consultants (OPC) Private Limited, Bengaluru, India.

Corresponding author:
Rajshekar Krishnan, Wayda Consultants (OPC) Private Limited, Bengaluru 560062, India.
E-mail: rajshekar.krishnan@gmail.com
Basic Terminologies

Let us outline a few basic terminologies often used in neuroscience:

**Neuroscience**

The study of the brain and the nervous system.

**Brain cells**

The brain is made up of different types of neurons and glial cells.

**Neurons**

The latest research indicates that there are 86 billion neurons in the brain with 16 billion in the cerebral cortex (Suzana, 2013). Neurons create neuronal networks that connect, unconnect and reconnect as we learn, unlearn and relearn.

**Glial cells**

These provide structural support to the neurons. However, they do not form synapses and cannot transmit impulses.

**Brain structure**

The brain consists of the cerebrum, the brainstem and the cerebellum. Most activities of the body are controlled by the brain.

**Brainstem**

It is the posterior part of the brain, adjoining the spinal cord. In the human brain, it includes the midbrain, the pons and the medulla oblongata. Some significant areas of the brainstem are as follows: (a) hypothalamus, (b) thalamus, (c) pineal gland, (d) mid-brain, (e) pons, (f) medulla and (g) cerebellum (Collins, 2016).

**Triune brain model**

One of the most common models of the brain structure is the triune brain model. It consists of the reptilian complex, the limbic system and the neocortex (commonly called the cerebral cortex or simply cortex; MacLean, 1990).

**Basal ganglia**

Also called the reptilian brain. It helps in the regulation of basic functions and keeps you alive.

**Limbic system**

The primary function of the limbic system is to preserve the individual and species involving our behavioural and emotional responses. It is crucial for individual safety, reproduction and nurturing the young. Some significant areas of the limbic system are as follows: (a) hippocampus, (b) corpus callosum and (c) olfactory bulb.

**Cerebral cortex**

The cerebral cortex handles all higher level processing of sensory information, communication and all higher order functions like decision-making. It is divided into lobes (occipital, parietal, temporal and frontal) and is also split into two halves: the famous left and right hemispheres.¹

**Neurotransmitters**

There are many types of chemicals interacting with the brain and the nervous system. Some of the important ones are as follows: (a) dopamine (DA; reward system), (b) serotonin (feel good), (a) acetylcholine (learning and remembering), (d) glutamate (linking of neurons) and (e) noradrenaline (vigilant attention).

**Brainwaves**

These are electrical activity set off when neurons are stimulated by neurotransmitters and hormones. Brainwaves are divided into the following categories: (a) Delta (0–4 Hz: deep dreamless sleep), (b) Theta (4–8 Hz: drowsy, ideating), (c) Alpha (8–12 Hz: relaxed, reflecting), (d) Beta (12–40 Hz: alert, working) and (e) Gamma (40–100 Hz: eureka moment).
Practitioner Experience

It has been my personal experience that knowledge of brainwave states enhances a person’s ability to make use of the specialized characteristics of those states: these include being mentally productive across a wide range of activities, such as being intensely focused, relaxed, creative and in restful sleep (Hermann, 1997).

Tools of neuroscience: Some research tools of neuroscience are as follows:

1. Electroencephalography (EEG): measurement of the electrical patterns of brain waves.
3. Magnetic resonance imaging (MRI): use of huge magnets to align atoms in the body and bombarding with radio waves. Different body tissues give off radio signals in response to the bombardment and computer systems convert the information into a three-dimensional image.
4. Functional MRI: helps observe the real-time behaviour of the brain by measuring the blood and oxygen flow patterns.

Neuroplasticity: Synaptic connections and neuronal pathway change due to the environment, behaviour, thinking, emotions, learning or physical damage. A key idea is that in order to rewire the brain, we need to pay attention to the stimuli that can change it (Robertson, 1999).

Neuroscience and Personality Traits

Personality or differential or individual differences psychology is the study of individual differences in terms of behaviour, the sources and consequences of such differences, and the degree of consistency of characteristics with the individual across situations and over time. This combination of differences among individuals and consistency within an individual creates what we call personality (Myneni, 2010).

Fundamentally, all organisations are composed of individuals. Personality is one of the domains of traits that are relevant for understanding individuals in organisations. The Big Five personality traits model is a well-known and most validated model of personality. The five big personality traits are often denoted by the acronym OCEAN: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (Friedman & Schustak, 2006). The impact of personality at work is paramount in areas of leadership and critical roles, indicating a need for successfully matching the role with personality.

A few of research findings on factors of neuroticism (exemplified by anxiety and stress reactivity), agreeableness (exemplified by pro-social orientation), conscientiousness (exemplified by constraint), extraversion (exemplified by affiliation) and openness to experience (exemplified by creative potential) are presented below.

Neuroticism: Researchers distinguish between fear and anxiety. Fear is a means of escaping stimuli that are inherently dangerous to survival, such as tactile pain, injury contexts, snakes, spiders, heights, predators, and sudden sounds. These specific stimuli in turn elicit specific responses of feelings of panic and behavioural escape when possible. Anxiety is characterised by a negative state where, though no explicit dangerous stimuli may be present, conditions are potentially threatening (e.g., consider a deer entering an open meadow; Davis, 2006).
This state and the physiological arousal that accompanies it continue till the uncertainty is resolved. The responses that typically help to resolve the uncertainty are heightened attentional scanning of the uncertain environment, and cognitive worrying and rumination over possible negative response-outcome scenarios. These stimulus conditions indicate why the trait of neuroticism is characterised by both anxiety and stress reactivity.

The interesting finding is that individual differences in anxiety and stress reactivity, and hypothetically the trait of neuroticism, are influenced, amongst others, by the following:

i. The central corticotropin-releasing hormone (CRH) system sensitivity-constant stimulation of the CRH results in prolonging of the anxiety.

ii. The epigenetic effects of early maternal care and perhaps other aspects of the childhood environment (DePue & Fu, 2012).

### Practitioner Adage/Implication

The popular advice for the worriers and the anxiety-prone is ‘to live in day-tight compartments’ (Dale, 1984). This reduces the term or duration of uncertainty to one day at a time.

### Agreeableness

The core content of social closeness and agreeableness scales reflects the operation of neural processes that create a warm, affectionate, gratifying subjective emotional state elicited by affiliative stimuli, such as soft touch; hair grooming; psychological and physical warmth; a caring, smiling, friendly face; soft, caring vocalisations; and shared intimacy.

Four neurobiological variables are associated with social bonding and agreeableness. They are as follows:

i. Oxytocin: it is a hormone secreted by the posterior lobe of the pituitary gland, a pea-sized structure at the base of the brain. Sometimes it is known as the ‘cuddle hormone’ or the ‘love hormone’ because it is released when people snuggle up or bond socially.

ii. Vasopressin: this is a diuretic.

iii. Opiates: these are enkephalins and endorphins which produce a feeling of calm and relaxation.

iv. Dopamine: this activates the reward system and controls arousal levels, and is vital for physical motivation.

All these act on the reward system of the brain and are addictive.

### Practitioner Quote

The advice in the Bible, ‘The faithful friend is the medicine of life’ is very prescient.

There is emerging evidence, also, that social interactions during the neonatal period organise the subsequent expression of affiliative behaviour by altering sensitivity to neuropeptides (Cushing & Kramer, 2005).

### Practitioner Quote

The popular quote

`The hand that rocks the cradle
Is the hand that rules the world’`

implies that the influence of the mother is immense on the child as validated by the research findings above (the quote taken from Hurd, 1964).
Conscientiousness: Conscientiousness (also called constraint by researchers) represents a broad trait of behavioural stability that modulates the expression of many domains of behaviour, including emotional, motor, cognitive and sensory reactivity (Carver & Miller, 2006).

Functional levels of neurotransmitters that provide a strong inhibitory influence on behavioural response may account for a large proportion of the variance in the trait of conscientiousness.

Thus, 5-hydroxytryptamine receptor (5-HT) plays a substantial modulatory role in general neurobiological reactivity to external stimuli that affects the expression of many forms of emotional/motivated behaviour. Natural variation in levels of 5-HT functioning may influence the development of thresholds of behavioural elicitation in emotional systems. The trait self-control is one big part of conscientiousness.

Practitioner Quote
The Bhagavad Gita opines:
A man of disciplined mind, who moves among the objects of the sense with his senses fully under control, free from attraction (raga) and aversion (dvesha) enters into serene tranquillity (Iyer, 1985).

Extraversion: Extraversion reflects the activity of a behavioural system based on positive incentive motivation. This system is activated by and brings the human in contact with unconditioned and conditioned rewarding incentive stimuli. Incentives are inherently evaluated as positive in valence, activate incentive motivation, increased energy through sympathetic nervous system activity and forward locomotion as a means of bringing individuals into close proximity to rewards. The incentive state is clearly evident in the external features of extraversion: social dominance, persistence and striving, achievement ambition, positive affect and assertiveness, as well as subjective feelings of desire, wanting, excitement, elation, enthusiasm, potency and self-efficacy that are distinct from, but typically co-occur with, feelings of pleasure and liking.

There is now broad support from neuroendocrine, neuroimaging and neurogenetic work for the association of DA with extraversion and its related traits of novelty seeking and impulsivity to reward. DA encodes the incentive salience of rewarding events and is involved in associative learning processes, where DA encodes neutral events that predict reward with incentive salience (Depue & Collins, 1999).

Individual differences in extraversion contribute to variation in such associative learning of predictive contexts, where higher levels of extraversion are likely associated with broader, stronger conditioned networks that create variation in context-facilitated incentive motivated behaviour, positive affect, social dominance and persistence in goal-directed behaviour.

Openness to Experience: The elements of openness are active imagination, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, intellectual curiosity and independence of judgement. Creative potential is usually defined as the ability to produce something novel and useful (Runco & Jaeger, 2012). It is known to be associated with openness to experience. Intelligence can be conceived as a cognitive prerequisite of creative potential. Openness, in contrast, may influence creativity, even at a fairly high level of IQ (Batey & Furnham, 2006).

Research findings indicate that intelligence and openness to experience were negatively correlated with regional gray matter volume in the precuneus—a part of the parietal lobe—although creative potential was positively related. Thus, it seems that while creative potential and intelligence, as well as openness, are positively related on a behavioural level, there seems to be a trade-off on the neurostructural level. Further functional imaging studies could help to clarify the complex interplay between ideational originality, openness and intelligence (Jauk, Neubauer, Dunst, Fink, & Benedek, 2015).
Neuroscience and Spirituality and Meditation

**Spirituality:** This dimension is defined by feelings of unity with creation and humanity, by an effort to feel at peace and in harmony with oneself, to be guided by spiritual principles and by a search for the meaning of life.

Neuroscience and spirituality were for long seen to be at two ends of a continuum. With the advent of modern neuroscientific investigative techniques (fMRI, PET, MRS, etc.), these two seemingly different areas have been brought together by studies which emphasize the effect of spirituality on the brain and the brain on spirituality. A majority of these studies include meditation as a method to understand the functioning of the brain during spiritual experiences (Thomas & Rao, 2016). The neural impacts of the various varieties of meditation have been studied very widely, and this research has yielded stunning results that systematic training in meditation, when sustained steadily over years, enhances human capacity for positive changes in the brain activity to an extent undreamed of in modern cognitive neuroscience (Rinpoche, 2007).

What are some of the changes that occur in the brain? Cortical thickening over time and increased blood flow in specific regions of the brain during meditation have been observed (Thomas & Rao, 2016). During a meditation on compassion, neural activity in the key brain centre (right insula) jumped by 700 per cent.

Prayer, contemplation and meditation pave the wave mystical consciousness (samadhi), although they may not directly produce that state (Beauregard & O’Leary, 2007). Meditation practitioners develop a foundation of accurate self-awareness and competent self-regulation (Edwards, 2015).

*Takeaways for HR Practitioner’s and Trainers*

Meditation will be one of the competencies that will drive personal and professional success. When HR competencies are getting commonplace and commoditised through commercially available psychometric instruments and soft skill training programmes, an employee with consistent practice of any meditative technique will be the winner with a differentiating capability.

Neuroscience and Leadership Styles

The transformational leadership model has been predominant in the literature over the past 25 years and has been the focus of numerous studies examining leadership and its effects. This paradigm emphasises how exceptionally effective leaders interact with followers in a manner that inspires them to higher levels of performance and commitment to their organisations. Transformational leaders do so through the articulation of strongly-held beliefs and values and visionary communication (Judge & Piccolo, 2004).

Using power spectral analysis of electroencephalograms (also referred to as quantitative EEG or qEEG methodology), the neurological correlates of transformational leadership were examined. The findings suggest that transformational leadership can be identified through variables collected as part of an EEG power spectral analysis.

That is, individuals who score high on transformational leadership can be delineated with a high degree of accuracy from those who score low based on qEEG variables. These findings would indicate that there may be a neural ‘signature’ for transformational leadership. It is noteworthy that qEEG variables involving pre-frontal and frontal lobes represent 40 per cent of the selected group of variables.
in the discriminant analysis. This is followed by the temporal lobes (17.8 per cent), central and parietal areas (15.5 per cent each), and the occipital lobes (only 11.1 per cent; Balthazard, Waldman, Thatcher, & Hannah, 2012).

In the context of transformational leadership, the frontal dominance is not at all surprising. The frontal lobe has been associated with ‘executive functions’. The frontal areas have also been associated with the effective handling of emotions—both in terms of managing one’s own emotions, as well as dealing with the emotions (e.g., emotional uncertainties) of others. In addition, the right frontal region is largely responsible for adding meaning to verbal communication, such as irony, sarcasm, emphasis, accentuation and intonation.

There is also growing evidence that the frontal right region helps us to understand novel situations (Goldberg, 2009).

### Personal Insights and Concluding Remarks

I will now present one of the findings of my research work and juxtapose it with the insights provided by neuroscientific research captured in this article. My finding was that transformational leadership was predicted by extraversion, openness to experience and conscientiousness in the case of the leader’s self-rating and only by conscientiousness in the case of follower’s rating (Rajshekar, 2012).

The subsection on Conscientiousness indicates that ‘functional levels of neurotransmitters that provide a strong inhibitory influence on behavioural response and account for a large proportion of the variance in the trait of conscientiousness’. The connection between the frontal lobe and transformational leadership has highlighted just a few paragraphs before.

I can only speculate the connection between behavioural and neuroscientific findings. Conscientiousness is a predictor of transformational leadership in both the cases of the self-rating of the leader and follower rating of the leader. Therefore, the levels of neurotransmitters that affect conscientiousness are high enough for the leaders to identify it within themselves and for followers to recognise without. If the level of such neurotransmitters are controlled by the activity of the frontal lobe (seems a reasonable hypothesis!), then it leads to a greater understanding of the basis of the transformational leaders demonstrating conscientiousness. I must hasten to add that this is a hunch to be further sobered by the limited or special context of all research findings.

However, such hunches are the stuff of future research and in the words of the wise Bard, ‘We are such stuff as dreams are made on’.³

I conclude with a few quotations:

> Our knowledge is amassed thought and experience of innumerable minds. What lies behind us and what lies ahead of us are tiny matters compared to what lies within us.

—Ralph Waldo Emerson (Hurd, 1964)

---

³ Even though its common knowledge these days, it ceases to amaze me that all the richness of our mental life—our religious sentiments and even what each of us regards as his own private self—is simply the activity of these little specks of jelly in your head, in your brain. There is nothing else. (Ramachandran, 2003)
Notes

2. The Bible, Apocrypha, Ecclesiasticus, 6–16.

References


Rajshekar, K. (2012). A study of personality traits, spiritual transcendence and leadership styles in India (PhD thesis). Faculty of Management Studies and Research, Aligarh Muslim University, Aligarh.


Author’s Bio-sketch

Rajshekar Krishnan is a veteran L&D professional. He has over 33 years of work experience in leadership positions in the L&D function. He has worked with Union Carbide, Taj Krishna, Hyderabad, NIS Time Manager International, EMC², CA, IBM, Right Management and Flipkart. He is the Founder Director of Wayda Consultants, Bangalore.

Rajshekar was awarded PhD (Management) in 2012 by Aligarh Muslim University. His research interests are spirituality at the workplace, Indian ethos for leadership, Indian psychology and organisational behaviour, management and leadership development. He studied at Motilal Nehru National Institute of Technology Allahabad and was awarded the Bachelor of Engineering (Mechanical) in 1983.
Grow, Perform and Change Using Neuroscience

R. Anand

Abstract
We can recruit neuroscience to improve our performance, accelerate our growth as well as lead change. Research in psychology, behavioural economics and now neuroscience provide the routemap to such a future. The article explores how and on what basis such a routemap could be drawn.

Keywords
Neuroscience, personal growth, performance, change management

We Are Not What It Seems We Are1,2

Advances in the study of human choice making have established us to be far less rational creatures. We are constantly narrating our own stories and imposing their structure on the real world. Unbeknownst to us, this very narrative drives us in far-reaching ways. It causes us to fight, to flee, to woo and to conquer. We are quite helplessly driven by these forces and lead suboptimal lives.

Psychologists postulated a subconscious and unconscious mind to explain this phenomenon. The ego defences we once employed in the face of overwhelming experiences have overpowered us. They have ‘fixated’ us to a way of viewing the world. It was for the same reason that Lady Macbeth could not stop washing her hands. She imagined a stain of royal blood on her hands. She became obsessed with that thought and had to compulsively wash her hands to escape discovery and punishment. This dysfunctional adaptation to tide over the present crisis causes us to land in more crises in the future. If we do not see the world clearly, how can we learn, perform, change in response to and enjoy? Psychotherapy was about to understand the source and impact of these distorting impulses and to gently reduce their hold on the way we operate. This insight ‘grows’ and ‘matures’ us.

Enter neuroscientists. They peer into the fine threads that connect body and mind. The brain and the nerves that help the body–brain communicate with each other are the topic of investigation for neuroscientists. The brain itself is composed of several subsystems. These scientists are veering around to the view that these subsystems are themselves competing for resources and primacy. For example, when

---

1 Sr. Vice President, HCL Technologies Ltd., Noida, India.

Corresponding author:
R. Anand, A8/9, Sector 60, Noida 201301, India.
E-mail: anand.rajaganesan73@gmail.com
the amygdala is aroused, we are geared for a massive negative situation; when the parietal lobes are engaged, we can tackle moving objects; and when the temporal lobes are engaged, we begin to see patterns and meaning into things. Similarly, when our prefrontal cortex is engaged, we plan, anticipate, think and worry.

Our longer term personality and our shorter term behaviour is a product of the struggle of each of these subsystems to ‘call the shots’. Again, there may be no centre, and no master command centre located in some special area of the brain.

And just who drives the final outcome maybe a more diffuse and probabilistic process. Nevertheless, the odds for a kind of behaviour or personality or even mastery can be increased by a careful application of the findings of neuroscience. It is just this possibility that holds the holy grail of our peak functioning and well-being as a species.

How do we stimulate and suppress these different areas and subsystems of our neurocircuitry and what is the impact? Also, how can we direct this effort—this stimulation and suppression purposefully?

**Becoming Open and Agile: First Step to Development**

‘The ability to entertain a thought without believing it is the mark of an educated mind’, said Aristotle. Neuroscience discovered this to be a hard job.

Consider the following simple figure:

It is either a cuboid that you are staring down from the right side above or staring up on your left side below. Now, try seeing both the perspectives together. It is impossible! We have a strong compulsion to settle into one perspective. Imagine the consequences of this compulsion. It is hard for us to reassess the first impressions of a candidate based on new data coming through the interview. Even if you cannot hold both the perspectives at the same time, can you train your mind to hold them sequentially at the least?

In life and death situations, we have to settle down into one perspective and decision. At other times, we can playfully hold each perspective in turn and explore. When we are in a hurry and settle down into one perspective, the unexplored perspective is pushed into our subconscious mind. The unexplored perspective resurfaces as night-time dreams. If we learn to be open to the messages from our dreams, we can access this second perspective and make better decisions. It helps us to be creative.

Great leaders, both in business and in knowledge work, are able to playfully explore the consequences of a position or assumption. This helps them understand problems in a multi-dimensional way, and makes them successful, inclusive, flexible and agile.

It turns out that in those moments of openness, a different part of our brain is active! This part of the brain allows us to explore ourselves in an effortless summative way and explore alternatives about ourselves and the world. This is a region in the right hemisphere of the brain responsible for creativity. We are able to play with possibilities.
The great neurologist V. S. Ramachandran created a simple experiment to demonstrate this. He had studied and solved the problem of phantom limbs and obtained worldwide fame. After patients lose their limbs in accidents, they have a vivid sense of the lost limb. They also experience pain in those phantom limbs. Initially, this was laughed at, but soon several patients complained of pain in those phantom limbs and were desperately looking for a cure. It was during one such exploration that he faced an intriguing situation. He had a patient who denied that her arm was paralysed. She would come up with ingenious excuses as to why she does not want to move her arm. She was otherwise a perfectly normal looking person. He read about a different experiment performed by another neurologist who could activate the right side of the brain by injecting cold water through a syringe into his left ear. This temperature shock somehow seemed to pass through the acoustic nerve pathway and provoke neural activity on the right side of the brain. The eyes dart from side to side uncontrollably. To neurologists, this darting seems to be similar to the rapid eye movement (REM) we experience in our dream state. As Dr Ramachandran injected cold water, as expected, the patient’s eyes began to dart from side to side uncontrollably. And, Lo and behold! She admitted that she has not been able to move her left arm for many months now! The effect of this ‘intervention’ seemed to last for several hours. The following day, however, the patient returned to denying her paralysis.

Although it sounds ludicrous today, I soon foresee development and counselling practitioners utilising such neurological interventions to help leaders get alternative perspectives and augment their capabilities to win more and enjoy more. Surely, there will be ethical questions to answer too. By augmenting leadership capabilities like this, are we indulging in a kind of ‘doping’ that we all loudly condemn in competitive sports? Nevertheless, neuroscience can be recruited to aid personal change and transformation.

**Peak Performance**

In the 1970s, the legendary Hungarian American psychologist Mihaly Csikszentmihalyi discovered and coined the concept of ‘flow’ or peak performance. He interviewed the masters in different fields and later common folk and asked them to recall times when they were at their best. He noticed striking similarities in the way they described these experiences. They seemed to attain a flow state of heightened perception and awareness. Their actions and perceptions seemed to be one continuous, effortless and seamless flow when they were at their peak. The conditions to create flow have now been well documented. There is much interest to recreate such conditions of flow as many times as it is possible. What happens to us when we get into flow, however, remained a black box.

In the last 15 years with advances in brain imaging, neuroscientists are now able to capture our ‘brains in flow’. During flow, our brain waves slow down into alpha (similar to day-dreaming) and to theta (the early-dream state or the boundary between wakefulness and sleep). At normal times, our brains emit beta waves which are of higher frequency. Miraculously, we seemed to become good when we slow down and allow ourselves to play with things in an unhurried manner. We seemed to switch off the effortful, energy guzzling regions of the brain and switch on the more effortless, intuitive sides of the brain. We recruit our unconscious mind, our emotional summaries to attend to, perform at our peaks and enjoy whatever we are doing.

At the neuronal level, the prefrontal cortex, which gives us the notion of past, present and future, and which plans, anticipates and worries, is suppressed. The dorso-lateral prefrontal cortex, which is involved in self-monitoring our voice that reacts to ourselves, is shut out. Our thoughts to ourselves, which pull us up for messing them, which compliment us for doing well and which keep narrating how well is life
going on, are silenced. We are not second guessing ourselves and slowing down. We no longer experience self in the usual way and time in the usual way.

We are sure of ourselves—there is an abundance of serotonin (the confidence molecule), we are mildly stressed (in a good sort of way, challenged to rise to the occasion—there is norepinephrine) and we secrete dopamine—in mild anticipation of a positive outcome—and anandamide (a type of cannabinoid produced by the body) that provides pain relief, regulates appetite, improves mood, repairs the body and also kills cancerous cells.

Early attempts are already on to use biofeedback to get us into flow. Biofeedback is telling ourselves how are we doing and encouraging the body to adjust ourselves to the right state. Using biofeedback, scientists have been able to train normal people to achieve states similar to those achieved by master meditation practitioners. We can teach our brain using biofeedback to get into flow state in days. As our neurometrics get more sophisticated and accessible, this is a near-term possibility in the hands of all of us.

**Leading Change**

We have efficient short-cut schemas by which our bodies make efficient summative assessments. We can change ourselves, persuade others or resist temptations by understanding these very same processes.

When we decide between options, for example, to continue writing this article or to go for a walk or help my children with their assignments or nibble a snack, a complex process is expected to be at work. The snack nibbling activates and tempts a different area of the brain—linked to pleasure and instant gratification, and simultaneously perhaps guilt. The help my children option similarly activates another neural and chemical circuitry, as it is about helping others, doing my duty, etc. To continue writing gives me an intrinsic pleasure. However, when I am stuck and blocked, the other options win over and I tell myself that ‘a break is good for the writing’! Isn’t this a milder version of a denial of my paralysis? This is squarely a distortion of perception. We indulge in such distortions all the time. I might tell myself that I have been doing sedentary things since morning and ignoring my physical health. There is some truth and some falsehood in each of these choices as they are driven by different areas of the brain. Now, how do I make these choices? It will take many loops of processing to truly arrive at the right choice for me. However, we seem to do this all effortlessly. We do it every day. We are not tired by such choice making. How do we do this so efficiently?

We do this by simulating each of these choices—we check our gut as to how good we will feel while taking each of these choices. We go for that choice that seems better amongst every other alternative. Our body’s emotional summaries are a very powerful and efficient way for our brain to make choices. This is the reason why increasing the vividness of the simulation tricks our body into believing that this choice is better. For example, if a snack box is in arms’ length, I will go for it because it is easier to imagine what it is like to snack. Similarly, if my son puts his arm around me and asks a question about his assignment, I will readily swing to that choice.

When leaders drive change, it is a good idea to give a prototype of the futures they are trying to collectively create. This will instantly swing the followers to accept this direction. More importantly, followers will also believe that they wanted it in the first place. A goal prototype and private space where the team can visualise that goal and simulate its reality in their individual terms is the best way to secure commitment and improve efforts towards this goal.
Gaining Versus Losing Trust

Sometimes we can provoke wrong summative assessments in the bodies of our followers. For example, the ability of leaders to persuade followers rapidly diminishes when the persuasion is happening in a foul smelling ambience! This has been proven by studies. This is perhaps the source of the common expression, ‘Something is fishy!’

At other times, we might be getting it right but sudden circumstances may have provoked a visceral distrust. If you are in such a situation, there is no choice but to stop, wait and let things settle down. It is as if the followers have chanced upon a dagger inside the cloak and no amount of persuasion is going to now swing them back to your fold.

Consider the below sequence of events as narrated by a fellow professional:

I was working with the CEO. He asked me to investigate if we have overpromoted people in the growth phase of the industry and created unnecessary layers. I set to examine middle management. I had recently moved to this corporate role, and so naturally, I brainstormed on this problem with the previous division leaders where I had worked as a business HR partner. I did not mention to them one bit that this was the CEO’s assignment. We created a matrix of 13 aspects of the job and four levels of complexity, including weights for each of the aspects. The idea was to score every managerial position represented by a job holder on this scale. If the scores are within range, they are OK, if it is higher, we must consider promoting them and if they are below range, we must either load more responsibilities or gently move them to other responsibilities.

As we were plotting some test cases and refining the framework, the division leaders would insert their comments on the parameter or the scaling. I was now confident that this can be taken and applied to the middle management of all the divisions.

Naturally, the heads of the divisions were professional rivals. I did think that I enjoyed special relationships with all of them. Just to mask their identities, I am going to call the division heads as V.R., A.R. and S.K. While I worked at V.R.’s division, S.K. was my mentor. I have often done special assignments under him to be mentored by him. I must say that I looked up to him. He sometimes gave very confidential assignments of his division to me. The other leader A.R. too was close to me. I had coordinated his joining and induction a few years ago.

On the D-day, I was explaining this to all the division heads. It was going great, and they were visibly applauding the effort and the outcomes. It was that point where every division head was saying—plot my people and let us create a roadmap of correction. I was bubbling with excitement when I accidentally dropped the whiteboard eraser on the table and it moved the mouse. The mouse now pointed to that cell which had a comment. In ‘View comments mode’, it revealed that someone from V.R.’s division had iterated with me.

‘Oh’, S.K. said, ‘this is V.R.’s framework. It must be good for him and bad for everyone else’. He turned to his other colleague A.R. and said, ‘A.R., isn’t this too important to go over in detail?’ As the discussion had come to an end and commitments have already been expressed, I took this as a jocular comment. To my surprise, A.R. agreed, ‘Yes, it involves our key people and we must set up another two hours and go over this in detail’.

Alas, that meeting never happened!

We can recruit neuroscience to improve our performance, accelerate personal growth, lead change and much more. Yes, the future of HR is going to be powered by neuroscience. We are going to create ‘augmented’ individuals.

No, you are not reading science fiction and no, no, you aren’t dreaming either!
Notes

1. The views expressed in this article are personal.
2. The experiments described in this article are not to be performed without adequate caution, consultation and medical supervision.

References


Author’s Bio-sketch

Neuroscience in HR: Steer and Take Charge

Sajan Mathai and Aparna Anna Mathai

Abstract
A leader builds an organisation and her/his mood and behaviour often drives the mood and behaviour of the team, and this has implications for the organisation. Current advances in neuroscience have revealed underlying brain patterns possibly associated with certain components of leadership. A leader could build her/his team by learning to manage herself/himself and others in an organisation during critical, challenging situations by using resources on their own volition to balance themselves. When leaders manage, attune themselves and lead, they create a climate of emotional and social intelligence, thereby building a culture leading an organisation into the future with sustained business results. This article attempts to look at why leaders need to continually work on themselves and explores different ways of building socially and emotionally intelligent leaders.

Keywords
Social–emotional leadership, emotional contagion, intuition, emotional regulation

Capturing a beautiful truth, Rabindranath Tagore in his poem wrote:

Where the mind is without fear and the head is held high …, where **tireless striving** stretches its arms toward perfection. **Where the clear stream of reason** has not lost its way into the dreary desert sand of dead habit…,

LET MY COUNTRY AWAKE! (Gitanjali: Song Offerings)

In business management, the profit and loss bottom line is often the only yardstick of performance. However, the performance of an individual or a team can be clouded by many factors. This article attempts to look at different ways of building leaders with an emphasis on social and emotional intelligence.

---

Corresponding author: Sajan Mathai, Oracle India Private Limited, Oracle Technology Park, India Development Center, No. 3, Bannerghatta Road, Bengaluru, Karnataka, India.
E-mail: sajan.mathai@oracle.com
Social Intelligence

In the early 1900s, the famous Columbia University psychologist Edward Thorndike had put forth an idea that ‘the best mechanic in a factory may fail as a foreman for lack of social intelligence’. Does this idea, proposed during the industrial revolution, still hold ground today? Is it possible that, in a team, the best individual player when promoted to a leadership position could fail as a leader for the lack of social skills? Recent research into emotional and social intelligence has tried to answer these questions.

When people feel better, they tend to perform better. In the model proposed by Fredrickson (1998, 2001) called Broaden and Build, positive emotions like love and joy help broaden a person’s available repertoire of cognitions and responses. Positive emotions help broaden the scope of attention and cognition. This in turn helps improve creativity and problem-solving. If leaders focus on producing positive business results, they should demand excellence from their teams. However, this cannot be done in isolation. What it requires for leaders is to simultaneously focus on creating a positive mood in their teams. This requires an emotionally and socially intelligent leader.

A leader’s mood and behaviour often drives the mood and behaviour of the team. In other words, a leader’s mood seems to create a climate that facilitates trust, growth, healthy risk-taking, creativity and problem-solving (Goleman, Boyatzis, & McKee, 2001). So how does this climate form? Is it a predetermined personality of the leader or something more malleable? Or is the climate simply affected by the daily experiences and moods of the leader? Often the climate in an organisation or team is affected by the leader’s emotional and social style. This indicates that emotional and social intelligence is the ingredient to create a work climate in which information sharing, trust, healthy risk-taking and learning flourish in the team.

Figure 2. Resonance and Growth

Source: Author.
The leader’s mood is contagious. This has been compared to the phenomenon of electricity being carried through an organisation through wires. A leader need not only ensure that he/she is regularly optimistic, authentic and energetic but also ensure that his/her team is also feeling and behaving in the same way. Research done in this area has indicated that a leader who can regulate his/her own mood would be better able to attain desired outcomes as it regulates the group processes as well. Thus, these researchers had concluded that enhancing leaders’ capability in regulation should result in mood contagion that may lead to more effective groups (Sy, Côté, & Saavedra, 2005). How does a leader ensure this? It begins with the leader managing his or her own inner life in order to facilitate the chain of behavioural and emotional responses from his/her team. However, managing one’s inner life is not easy. One is often not taught to do so explicitly. It might occur to some as they churn through life, through their own introspection or through feedback from others. To many others, this might not seem like a priority. To add to the complexity of this, one cannot gauge the impact of their inner lives on those around them, especially on their colleagues or subordinates. How often have you noticed how those around have performed on the days you were having a tough time or were in a difficult mood?

In addition to the above, it requires the leader to analyse and reflect on his/her own emotional leadership style and how this in turn affects the mood and actions of his/her team and then to strive to adjust his/her behaviour accordingly. This does not imply that leaders need to be superhuman, perfect, overly optimistic and unrealistically cheerful. Instead, research indicates that leaders need to attend to themselves (their mood and behaviour) while executing their corporate responsibilities (refer Figure 1).

The impact of the emotional and social competence of a leader needs to be discussed more in the open. An upbeat leader inspires his/her team to put in more thought, improve performance and makes his/her team feel like everything is possible. On the other hand, a crushing leader makes his/her team toil without any satisfaction and makes every day gruelling. Research is clear on how the emotional state of a leader drives performance. Researchers reported that the non-verbal expressions of people could affect those around (Friedman and Riggio, 1981). For instance, in a room with strangers sitting around, the most emotionally expressive of them seemed to transmit their mood to the others without any verbal exchanges being involved. This is emotional contagion. Emotions within the organisation seem to follow the same trend. Moods that start at the top end up raining down. After all, all eyes are watching the leader. Even though the leader might be on a different floor, or behind closed doors, team members take emotional cues from him/her. Walls and doors cannot hold attitudes and moods. Those that report directly to the leader continue to carry emotional ripples that go on to affect the entire team.

Leadership: Neuroscience and Managing Oneself

So what might be the reason behind the emotional contagion of a leader? For many years, scientists have researched the emotional centre of human brains. The limbic centre, the seat for emotions have two loops: (a) the closed loop is responsible for our self-regulation and (b) the open loop is sensitive to external sources. In other words, a person’s mood relies on connections with other people. This is evolutionarily important as it allows us to survive socially and rescue one another emotionally. Even though this is such an important part of human lives, it often does not get due attention.

Some of the advancements in neuroscience research including Functional Magnetic Resonance Imaging and Quantitative Electroencephalography have revealed underlying brain patterns possibly associated with certain components of leadership. This has added to the current understanding that cognitive and affective elements play a vital role in effective leadership. Phelps in 2006 had reported that
decision-making and reasoning are intertwined with the neural circuits of cognition and affect. Do such findings imply that individuals are predetermined or static in their nature and their ability, or can leaders be made? The most recent advances in neuroscience point to the plasticity of the brain, which is the ability of the brain to adapt and change the nature of its activity. Thus, although a subgroup of all those chosen to be leaders might have profiles suggestive of deficiencies in social-emotional leadership, human ability to be malleable through the form of neural plasticity offers a plethora of options for a person to adapt and grow into a stronger and productive leader.

To be able to grow, one needs to first become aware of his/her limits. A leader who has difficulties managing his/her anger is hardly going to be seen as inspirational and inspiring. A leader who is not assertive and fails to rise up to situations when interacting with his/her superiors is not going to lead his/her team to the highest of their potential. Building self-awareness is the first step in developing oneself in becoming an efficient leader. Downward management, upward management and self-management are intertwined and make an effective leader.

Great leaders often talk about leading from the gut. This could involve being attuned to mood changes as well as paying close attention to others while negotiating. Decisions need to be constantly made using intuition as well as rationality and input from others around. However, in the pace at which one is required to work, there is not much time or scope to be constantly consulting those around, before taking every decision. This is where scientists, backed by research in neuroscience, have thrown light on intuition being a part of the brain. Intuition seems to be produced in part by a class of neurons called spindle cells that have been implicated as our inner social guidance system (Allman et al., 2010). These cells provide ‘split second’ inputs. Researchers support the use of intuition when leaders are also attuned to their team members, that is, they experience rapport and resonate with their team.

In addition to spindle fibres, the brain has other special neurons called mirror neurons and oscillators. These classes of neurons and cells fire to help leaders become more socially adept. Although the potential to understand human ability is expanding, research has been limited in helping individuals improve the way their spindle fibres, mirror neurons and oscillators work.

However, mental preparation when consciously done before an event has been seen to activate the social circuitry of the brain, that is, it has been found to strengthen the neural connections one needs to act effectively. This is probably the reason why Olympic athletes put in hundreds of hours into mentally reviewing their moves before the final performance. If leaders were to spend some amount of time and energy into developing a model of effective behaviour, this could provide the perfect stimulation for their own mirror neurons. Over time, learning positive social behaviours can become second nature.

Neuro-Linguistic Programming (NLP) is a body of knowledge developed by Bandler and Grinder through their extensive research. It is a way of exploring what goes on inside a person. It tries to use techniques to understand how the brain works, how people think, feel, learn and motivate themselves, interact with others, make choices and achieve realistic goals (McHugh, 2009). It has been described as a way of approaching reality and a way to search for answers by building one’s awareness. It is essentially working with self. It involves a series of sensory activities that help to build one’s sensory acuity and increase a person’s behavioural choices. In other words, it is providing stimulation for one’s own neurons to be able to consciously trigger a resourceful state of mind to effectively handle situations.

The proponents of this knowledge base defined neuro as the chemical response creating the internal sensory response and its resulting behaviour modification (external). They defined linguistic as the learned digitisation, that is, words that trigger neurochemical responses. Programming is defined as the structure, restructure and utilisation of syntax (verbal and non-verbal) to increase useful choices of behaviour.
An important concept in NLP is anchoring. It is an exercise to consciously trigger a resourceful state, within one self, such as a feeling of assertiveness, confidence, motivation, being appreciated, interest, curiosity, eagerness or even alertness. Cues for anchoring could take on many forms such as touch, verbal tones and facial expressions.

NLP also focuses on improving communication and breaking childhood learnt patterns of communicating. NLP holds that a good communicator is not one with just a superior command of language and delivery but one with enough sensory experience and flexibility to make one’s intended meaning of communication match the response elicited.

This is only a glimpse into NLP. Training and guided experience in NLP are required to better understand and apply its concepts.

Another avenue getting increased attention is mindfulness. Mindfulness can be defined as non-judgmental, concentrated observation of one’s perceptions, thoughts and emotions in the present moment, with an attitude of equanimity, curiosity, openness and acceptance (Bishop, 2004). It has its origins in eastern philosophy and dates back to ancient Indian practices such as *vipassana* (meditation involving concentration on the body or its sensations or the insight which this provides).

Mindfulness is a mental orientation and a set of strategies for focusing one’s mind on the here-and-now experiences. It helps managers to handle everyday hassles, stress, reduce burnout, enhance leadership capacity and steady their minds when in the midst of making important business decisions, career transitions and personal life changes, thereby building an important managerial competency (Whetten & Cameron, 2007). Research has also shown that mindfulness helps to build relationships and increase empathy, both of which have been found to contribute to building important managerial competencies (Goleman, 1998; Whetten & Cameron, 2007).

The above resources could be used on one’s own volition to balance oneself. In a volatile, uncertain, complex and ambiguous world, NLP and mindfulness are some tools to better equip oneself to face reality. A leader needs to manage herself/himself and others in an organisation during critical, challenging situations by being in the here and now.

When leaders manage and attune themselves and lead, they create a climate of emotional and social intelligence, thereby building a culture leading to an organisation with sustained business results in the future.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Note

1. The views expressed in the article are our own and do not represent those of our organisation/institution.
References


Authors’ Bio-sketch

**Sajan Mathai** is a Senior Director at Oracle India with over 20 years of experience in human resources (HR). He has worked in the areas of HR transformation, leadership development, employee engagement, performance and talent management, personal values clarification and alignment to business values, employee relations and HR compliance investigations, 360-degree feedback coaching and development centres. He completed his post graduate diploma in business administration from St. Joseph’s College Bangalore and executive general management programme from IIM (Bangalore).

**Aparna Anna Mathai** just completed her M.Phil. from NIMHANS, Bangalore, in clinical psychology. She worked as a fellow in Teach for India and has been involved in various assignments and internships during her academic days with organisations such as the Department of Science & Technology, Ministry of Science and Technology, New Delhi, Influence of Chess learning on comprehensive cognition development of children, Schizophrenia Research Foundation (SCARF), St. John’s Medical College, Bangalore, and American International School, Chennai.
How Neuroscience Transformed Business: The TCS Story

Smita Affinwalla¹, Ranjan Bandyopadhyay² and Ashmeeta Chugh³

Abstract
Recent breakthrough advances in neuroscience have helped us understand the changes that the brain undergoes when it is in the process of learning. In this ever-changing environment, it is important for the human resource (HR) fraternity to adapt and stimulate organisational changes using the new knowledge that advances in neuroscience have brought us. It would be observed that in any organisation there are some persons who are better at engaging, impacting, influencing and networking besides meeting all productivity and other related targets. If these positive behaviours could get replicated across more people in the organisation, it would mean that the organisation would have a workforce which can help build ‘organisational character’ and social change by identifying solutions already existing in the system, thereby increasing organisational effectiveness. This case describes how Tata Consultancy Services, facilitated by HR, was able to do this by using neuroscience.

Keywords
Neuroscience, performance enhancement, leadership development, business impact

Introduction
The human neural system, including the brain itself, is still one of the least understood parts of human anatomy. That being said, over the last two decades, understanding both of these—which is what neuroscience is all about—has exponentially increased. This had been made possible by huge investments in neuroscience research from governments, for example, President Obama’s ‘The Brain Project’, the IT industry, for example, artificial intelligence (AI), the pharma industry, for example, Alzheimer’s and also the advances in medical imaging technology. Thus, today we have a never before understanding of how the brain and neural networks actually work, and there are many surprises!

¹Managing Director, Illuminos Consulting Private Limited, A/7A, Khalakdina Terrace, August Kranti Marg, Mumbai, Maharashtra, India.
²Global VP Human Resources, TCS House Raveline Street, Mumbai, Maharashtra, India.
³Head–Talent Development, TCS House Raveline Street, Mumbai, Maharashtra, India.

Corresponding author:
Smita Affinwalla, Managing Director, Illuminos Consulting Private Limited, A/7A, Khalakdina Terrace, August Kranti Marg, Mumbai 400036, Maharashtra, India.
E-mail: smita.affinwalla@illuminosconsulting.com
Due to the entire tech industry moving increasingly in the direction of AI and machine learning, some of the most extensive research has gone into understanding how humans learn. The implications of this are enormous and spread across many spheres. We are sharing below some of the key findings which have major implications on HR and learning and development (L&D):

1. **Positive imagery and verbal affirmation** release dopamine that promotes openness to change.
2. **Writing transfers neural resources** from areas of the brain associated with fear to areas of the brain associated with control and empowerment.
3. **Social learning** has a direct positive neural impact.
4. All learning is the **wiring of neurons into particular patterns**. This occurs most effectively through frequent, short, practical and personal learning experiences, in a social context.
5. **Iteration** is important.
6. **Multitasking** is inefficient.
7. **Leveraging the biology and biochemistry of the brain** for learners leads many more people across different points of the performance curve to learn quickly.

This knowledge has been leveraged by many organisations, institutions and governments for dramatically enhancing learning outcomes in preschool children, sports and military personnel, and employees across a spectrum of organisations.

**Case Study**

We used this knowledge to help India’s most valuable company, Tata Consultancy Services Limited (TCSL), solve a critical business problem. The problem was complex and multifaceted, as business problems inevitably are, and was stated as follows.

**Operating Environment**

The IT industry is currently in a phase of transformational disruption. Automation and the digital five forces⁴ are rapidly changing the business models and the traditional roles that existed. This industry is constantly innovating and reinventing itself.

One of the most critical roles in TCSL is that of the ‘team leader’ (TL). The TL manages the execution of client processes, through the execution team, and is thus primarily responsible for achieving the service level agreements (SLAs) and customer satisfaction—measured by the Customer Satisfaction Index (CSI). In this highly competitive industry, CSI largely determines the continuity of business at TCSL as also organic growth through new customers. The TL is also responsible for managing the employee satisfaction and Employee Engagement Index. This is primarily because he/she is instrumental in motivating, managing and developing his/her team. As of today, almost two-thirds of the workforce (65,000+ people) are managed by TLs.

**The Ask**

These stakeholders said:

Team Leaders are a critical role for us as they are the first point of contact for teams and are responsible for execution as per client SOPs. In a highly competitive environment coupled with a situation where our revenue
model is constantly changing, TCSL needs to build deep customer understanding and customer centricity in this population, for us to remain competitive. These leaders and their teams have to be primed to constantly learn new skills. They must sustain learning and display the changes on the job. Also, if TCSL can improve leadership skills we will increase employee retention, which is strategically important to us.

Given the breadth and urgency of the ‘ask’ as described above, it was abundantly clear that traditional leadership programmes would not deliver the desired impact. What was needed was a holistic programme that would address technical as well as behavioural and attitudinal needs simultaneously. It was also imperative that the programme had a lasting impact.

The primary goal of the programme was to replicate the skills and behaviours of TCSL’s very best TLs across the cohort and the organisation, in a scientific, consistent and replicable manner.

Given that TCSL wanted to create ‘Green Spots’ across the organisation in large numbers, they decided that the learners for this programme should be chosen from across the performance spectrum. Thus, of the 77 learners identified for this programme, one-third of the learners were good performers, one-third were average performers and one-third were poor performers. They belonged to different client processes from vastly different industries and from several different locations, albeit in the same city. This project was christened—Project Exemplar: ‘How to become a great Team Leader at TCS BPS’.

**The Process**

**Step 1: Change the mental model.** In a three-day workshop, we worked with a group of exemplar TLs to define what a great TL looked, felt and acted like, and thus defined the ‘higher order’ purpose of being a TL.

*Neuroscience: Positive imagery and verbal affirmation release dopamine that promotes openness to change.*

**Step 2: Define the path to mastery.** We then ‘discovered’ from these exemplars what they needed to know and do to be the leaders they had described in the previous step and how they learnt these things. This helped us to define a path to mastery in the role of an empowered TL.

*Neuroscience: Positive affirmation and respect releases endorphins, oxytocin, serotonin, and dopamine, all of which enhance a feeling of well-being and thus learning.*

**Step 3: Create the learning journey.** We then crafted a neuroscience-compliant learning journey on the basis of the deep intrinsic knowledge we uncovered in the previous step which talked about five key themes. These themes were around the internal mental model, customer centricity, operational efficiency, team leadership, and culture and values. The learning journey was comprised of one or two short tasks per week designed to provide learning experiences towards predefined learning objectives. These tasks were very much ‘part of the everyday job’ but with an increasing degree of stretch in terms of sophistication and level of difficulty. The idea was not only to make learning easy for people, but also to stretch their imagination and thinking. Each theme would take approximately a month for adequate learning and reinforcement, to embed the behavioural and knowledge changes, at the neural level. The themes encompassed all aspects of the TLs’ role, both technical and behavioural.

*Neuroscience: All learning is the wiring of neurons into particular patterns. This occurs most effectively through frequent, short, practical and personal learning experiences, in a social context.*

**Step 5: Deployment across all learners.** Learners were formed into the learning units of seven members each, and each group was attached to a group learning facilitator (GLF). During the launch
workshop, all learners were given the opportunity to adapt and customise the learning tasks for themselves. Each group agreed to schedules for completion of tasks and telephonic weekly meetings. They learnt how to record and share learnings on Illuminos’ Infinos platform.

Neuroscience: Writing transfers neural resources from areas of the brain associated with fear to areas of the brain associated with control and empowerment, which increases both the desire to learn and creates the right chemical conditions in the brain to actually learn. Social learning has a direct positive neural impact. All learning is the wiring of neurons into particular patterns which happens most effectively through frequent, short, practical and personal learning experiences, in a social context.

**Step 6: Disruptive learning experience.** These TLs were then removed from their comfort zone of operations and sent on a two-week assignment across cities to perform roles, where they could leverage the learning that they had recorded on the Illuminos’ Infinos platform. This exercise helped the TLs practise the learning on a new set of associates, thereby further internalising the learning.

The challenges faced were very different from what they had experienced in the past. The fact that they had the authority to take significant decisions in representing the organisation boosted their morale and confidence, and made them feel empowered.

---

**The Results**

**Methodology**

A robust measurement of the results of this neuroscience-based approach was imperative, given that this was the first time TCS was using it. The measurement of the results was done at four levels using the methodology recommended by the ROI Institute, Chelsea, AL, USA, which is the most reputed organisation globally in this field. There were four different ways in which we measured results. These included a financial return on investment (ROI), the highest level in the Kirkpatrick model. The first level of measurement involved the comparison of the business metrics of the learner group with a control group, which gave us isolated financial results. The second level was the analysis of the learnings and impact as recorded on the Infinos platform for learning examples across learners and learning themes, which provided further evidence of the above as well as allowed us to see learning agility of the group in action. The third level was in-depth interviews with learners, their managers and the GLFs to confirm the ‘hard results’ as well as provide more qualitative data. The fourth level of measurement was a deep dive into the cases of financial results recorded.

This was all done seven months after the start of the programme so that the long-term impact and stickiness of the learning could be measured. Given that all learning is the wiring of neurons into particular patterns, as expected, the learnings were indeed long-lasting.

**Snapshot of Results**

Eighty per cent plus managers of learners saw a significant improvement in target areas like customer centricity, attitude and approach to work, work delivery management and team management. More than 90% saw some improvement. This was unusual given that 33% of the learners were so-called poor performers. This was measured seven months after the commencement of the programme which demonstrated the stickiness of the learning as opposed to ‘happy sheets’.
Sixty-five per cent plus managers saw significant, tangible innovation/process improvements from the participants during the course of the program. Seventy-eight per cent saw some innovation/process improvements. Seventy-nine per cent of the group showed improvement on business parameters such as productivity, attrition and team-learning days.

Financial ROI of the programme was over 1000%, which was measured in terms of metrics given below:

- Business process management
- Cost-saving
- Revenue increase through renewed/expanded contracts
- Customer satisfaction
- Turnaround time
- Reduction in the number of days in SLAs
- Absenteeism during 00a0. business continuity plan situation

The qualitative results from the programme were equally impressive and can be classified into three categories: self, leadership and organisation/ecosystem. Some of the notable results in these categories were as follows.

**Self**: Increase in self-confidence of every individual, willingness to take on larger responsibility in the same role, substantially increased awareness of customer, business and industry paradigms.

**Leadership**: Increase in team-learning days, improved quality of interaction with leaders, improved quality of interaction with customers, effective delegation and leadership pipeline building, informal engagements with team to take the team along, interest in coaching and mentoring team, (re)looking at processes for ‘value addition’ rather than SLA orientation.

**Organisation/ecosystem**: Frequency of demonstration of organisational values, customer centricity, wide networking within and outside the organisation for enhanced results, customer-centric innovation.

As described by TCSL, using neuroscience as the basis for learning had some very unique benefits.

1. To have 80% of learners showing significant improvement across a host of parameters, including hard-to-change aspects like ‘attitude to work’, particularly given that 33% of the cohort were poor performers was very unusual.
2. The neuroscience-based learning platform and the manner in which technology and the human element were leveraged resulting in a hi-tech and hi-touch experience that was very unique and very effective.
3. The overall approach—‘Make learning easy for people, use the neurosciences of learning and most people will learn’—was completely different from the usual approach of classroom learning combined with projects for on the job application and gave far superior results.
4. The lack of any prior assessment of learning needs of the learner cohort—the approach was ‘Define where you want to go and focus on getting there. It does not matter where you start’. This generated huge savings in terms of time and costs.
5. The nature of the learning tasks was that they were short, extremely relevant to learners and integral to the things learners should have been doing anyway. Thus, the learning was on the job and thus immediately applied by learners.
6. Every single learner had the opportunity for himself/herself to adapt tasks for greater relevance and thus greater application on the job and more permanent learning.
7. The learning curve of the GLFs and the two in one learning programme approach. Both the coaches and the learners were real learners in this programme.
8. The neuroscience-based approach was a very holistic approach and actually combined the aspects of emotional quotient (EQ), intelligence quotient (IQ) and in Jack Ma’s words love quotient (LQ), which makes it highly effective. Also, since it approaches learning from a biological level instead of an intellectual or emotional level, the learning impacts a much larger percentage of the population.

Conclusion

Neuroscience today is on the brink of revolutionising many fields of human endeavour. Unfortunately, it is also sometimes viewed and mumbo jumbo by those who do not understand its applications and therefore potential. It is also a mistake to believe that you have to be a neuroscientist or a psychologist to use neuroscience—none of the authors claim any expertise as neuroscientists!

Some examples that demonstrate the impact and the range of applications of neuroscience are as follows:

Turnaround for Children, a New York-based educational non-profit organisation, uses neuroscience-based methods to mitigate the effects of traumatic childhood situations on the education of children. Neuroscience helps to mitigate these stresses. In schools using turnaround for more than two years, math and reading scores have improved at double the rate of similar schools not using the programme.

Four-time Olympic gold medallist Michael Johnson has set up Halo Neuroscience to help athletes improve their performance.

A lumbering company in Canada reduced safety incidents from one per month to zero in 24 months and fatalities from one per annum to zero in 24 months by using the neuroscience-based methodology described in this article for creating a culture of safety.

A fast food chain in the United States moved from number 5 in market share to number 3 over an 18-month period by using the methodology mentioned in the article to enhance the performance of their restaurant managers.

AI and machine learning, which are the buzz words today, are nothing but applications of neuroscience in technology.

In conclusion, we submit that today we live in a world of never-ending knowledge, including neuroscience. It seems only appropriate that we as practitioners and proponents of HR leverage this knowledge for the benefit of our people and our organisations in the best possible way. We are on the brink of a revolution which will change the way we drive learning, culture, leadership and performance to name but a few critical issues in organisations. Let us ensure that we lead this revolution from the front!

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.
Note

1. The digital five forces are TCS’s model of today’s five greatest disrupting forces in the world in terms of technology. They are Social Media, Mobility, Analytics, Cloud and Automation.

Authors’ Bio-sketch

Smita Affinwalla is the Founder and Managing Director of Illuminos Consulting Private Limited. Illuminos is a consulting firm focused on the areas of leadership evaluation and development, talent management, and succession and is an associate of Cerebyte Inc. Smita is an Independent Director on the Boards of HDB Financial Services and Sicom and a member of the Industry Advisory Board of IIM Indore. She is a member of the Executive Committee of NHRD Mumbai Chapter, where she heads their Diversity & Inclusion initiative. She was also a senior fellow, Human Capital with the Conference Board, USA.

Smita is passionate about gender diversity. She relaxes by playing with her dogs and cooking for friends.

Ranjan Bandyopadhyay is a marathoner in every aspect of life. He is the Global Vice-President for human resources at TCS. His contributions to society and nation-building have been immense. Some of them, which he is extremely passionate about, are as follows:

- Means of livelihood for the marginalised Indian youth
- Connecting the academia to the industry
- Integrating diversities in the workforce

In the domain of diversity and inclusion, Mr Bandyopadhyay has been a champion of the LGBTQ cause, currently a nation-wide debate. He has also represented India in the United Nations forum for the HeForShe campaign at New York.

Mr Bandyopadhyay is a man of eclectic interests—from running marathons across the world to being an avid movie enthusiast—he has also produced a Bengali movie —89—and is all set for his next.

Ashmeeta Chugh, a Tata veteran, having worked with Indian Hotels Company Limited, is presently the Head of Talent Development at TCS. Having set up the Taj Reservations worldwide, at TCS, she switched career steams from operations to human resources a decade ago. She has donned various roles, the most interesting being that of head of Talent Happiness in her stint at TCS.

Ashmeeta follows the ‘YOLO’—you only live once motto. She believes that life is a constant learning journey and one should always be in a learning state. Keeping in with her belief, she has started learning the violin and sketching.
Leadership Development Through Change Management: 
A Neuroscience Perspective

Kiran C. S.\textsuperscript{1} and Parul Tripathi\textsuperscript{2}

Abstract

The complex and agile environment in which organisations operate today, with ever-changing technology penetrating every facet of our lives more than ever before, has led to a key challenge for the leaders of today, effectively managing change in organisations. The agile environment means organisations are required to go through changes on a regular basis and at a rapid pace. Today, leaders are required more than ever to understand the complex dynamics of human behaviour in organisations, to effectively navigate and manage change. Recent developments in the field of neuroscience have helped gain a much deeper, scientific understanding of human behaviour. Needless to say, the understanding of these neuroscience perspectives will open up tremendous opportunities for leaders to be more effective at the workplace. The article details a few such perspectives of neuroscience which are critical in change management and concurrent leadership development.

Keywords

Change management, leadership development, neuroscience of human behaviour

Introduction

Hundred years after signing of the Emancipation Proclamation came the ‘I Have a Dream’ speech of Martin Luther King Junior, and he became the proponent of one of the greatest social revolutions of the modern world. These words, meant to be a moment of internal shame for the United States, caused a ripple across the globe and set off a worldwide movement of racial emancipation. What was so unique about the speech that it became so popular and led to the biggest mass movement, the 50th anniversary of which was celebrated by BBC and the likes of Dalai Lama, Malala Yousafzai were chosen to speak those hallowed words? The timing was right, the world was changing and people

\textsuperscript{1} Human Resources, West Zone, Hindustan Petroleum Corporation Limited, West Zone Richardson \& Cruddas Building, Sir JJ Road, Byculla, Mumbai, India.

\textsuperscript{2} Freelancer, Mumbai, India.

Corresponding Author:
Kiran C. S., Human Resources, West Zone, Hindustan Petroleum Corporation Limited, West Zone Richardson \& Cruddas Building, Sir JJ Road, Byculla 400008, Mumbai, India.
E-mail: cskiran@hpcl.in
believed that anything could be achieved; TV networks were broadcasting directly to living rooms of people across the world and having a real-time impact on their thoughts and feelings. In his own words, ‘1963 is not an end but a beginning’. But more than all of this, it was the leadership of a person who believed and made the masses believe that they could achieve their goal of equality.

To draw a parallel with the above, the current environment is always primed for change, with many factors demanding and facilitating it. The kind of innovations and technological advances the world has seen in the past decade or two is unprecedented. Rapid globalisation has presented business and HR with challenges that would have been impossible to envisage a decade ago. Catering to a global customer base means keeping track of global changes and implementing the same on a real-time basis. And to facilitate and guide this whole process, there is a requirement of leaders who can motivate the masses, like Martin Luther King did, and develop the new leadership pipeline in the process.

There are various theories of leadership that do explain such an extraordinary phenomenon, but with everyone seeking empirical explanations, neuroscientists have been conducting numerous researches to study and find scientific, biological or physiological reasons, and they have been quite successful at that. In this article, we will explore the biological bases that make leaders great and also ways to use them in leadership development and change management. While there are numerous aspects involved in change management, the neuroscience behind most of them can be categorised under social intelligence, culture, communication, collaboration, resilience and decision-making.

### Social Intelligence

In 1920, Edward Thorndike defined social intelligence as ‘the ability to understand and manage men and women, and boys and girls to act wisely in human relations’. Social scientist Ross Honey will believes that social intelligence is an aggregated measure of self- and social awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social change.

Social neuroscience, the study of what happens in people’s brains when they interact, has been providing interesting evidence towards what makes a good and successful leader. A salient discovery is that leaders get attuned to what their followers are thinking. They not only show empathy but their brains also become one with each other, a phenomenon called ‘resonance’. Instead of reacting independently or consciously towards each other, the leader–follower dynamics follow a totally different path—they become diffused, the brain chemistry becoming exactly as each other’s. This is effected by a combination of three types of neurons: mirror neurons, spindle cells and oscillators.

**Mirror Neurons:** When we observe someone performing some action, the corresponding areas of our brain get activated due to the mirror neuron system. There is also evidence to show that there is a subset of mirror neurons that only works to pick up emotional cues. Studies indicate that emotional cues affect the brain more than the verbal content of a conversation.

**Spindle Cells:** These are special cells with a body size four times as big as that of regular cells and extra-long branches that help them attach with other cells more easily and communicate the information faster. This ultra-rapid connection of emotions, beliefs and judgements creates what behavioural scientists call our social guidance system. Whenever we have to choose the best response or best choice amongst many, the spindle cells fire a neural pathway. These responses are so quick that this is what is termed as intuition or gut feeling. Many logical thinking and reasoning leaders tend to ignore these instinctive reactions or ‘intuitions’, but now it is proven that these reactions have a biological basis and it is good to pay heed to gut instincts once in a while.
Oscillators: There is another set of neurons that help coordinate body movements. This phenomenon can be easily understood if you think of a music concert, all bodies swaying in the same rhythm, or when you see people nodding their heads together in response to a passionate speech made by someone.

A good understanding and effective usage of these neural circuitries can be the cornerstone of leadership development.

Culture

When an organisation undergoes a massive change, a major impediment is the acceptance of the proposed strategy/changes. The organisation has an existing vision, mission and goal, and accordingly there is an organisational culture. The employees have been learning this culture—the ways of communication, accepted behaviour, the technology being used, dress code and so on—since the day they joined the organisation and have been forming neural pathways to reflect these behaviours. The longer the association, the deeper the learning, stronger the synapses and, hence, deeper the cultural indoctrination.

In normal course of things, one of the biggest challenges in front of organisations and leaders is to keep track of what is going on in this area: Whether the organisational culture is aligned to the organisational goals and strategies? Consider a massive organisational change process going on where there is a major overhaul of the existing structure. The problem is twofold: rewiring the existing cultural connections in the employees’ brains and changing management strategy that correctly envisages the new culture to be put in place and is aligned to it.

Cultures are shaped by leaders. Till the 1960s, companies had predominantly a fear-based culture with the leaders choosing rewards and punishments on the basis of strict adherence to rules, productivity and profits only. With the change in the business scenario, there was a massive shift from manufacturing and production to knowledge and service-based employment. Today, even in product-based industries, advanced features/product properties and services are more important and distinguishing factors for the consumers and end users. Hence, to foster creativity and innovation, and to provide best services, organisational cultures have to change. Neuroscience has been validating, over and over again, that fear or threat-based systems overburden the cognitive capabilities and create a high-stress work environment for employees which limits and sometimes impairs their abilities to perform and their commitment towards work and the organisation.

An ideal organisational culture should primarily foster honesty, openness and trust in their employees, amongst other things. There are multiple ways of achieving this. Considering the previous section on social intelligence, the best way to instil a cultural change is for the leaders to emulate the core of that culture. If we want authenticity and we ourselves are not authentic, it will not be possible to achieve a state of ‘resonance’. It will instead create a cognitive discord. Hence, when the change initiative is being discussed with potential future leaders, the communication should be frank and honest. This will in turn prime them to follow the same in their interactions with their team members and people around them. A clear and truthful communication will further lead to the creation of a trust- and openness-based culture.

Communication

Being transparent in communications enhances trust. Clear and transparent communication on proposed changes and expectations from employees reduces ambiguity, and hence reduces the threat response of
the brain. When a feedback mechanism on the changes being made is also introduced, the employees feel empowered as they have a say in what is going on. This again increases trust in the process and reduces the threat response.

The desired communication flow in change management should have a top-down approach. When employees see the leaders owning up to the changes and processes and embodying them in letter and spirit, it triggers the mirror neuron circuitry and leads to better ownership at all levels. Having a top-down approach also ensures that the budding leaders get to convey the changes to their team members and colleagues and play an important part in the process.

**Collaboration**

The human brain is designed to keep looking for threats in the environment and be prepared to face them or retreat safely, the classic fight or flight response. Today individuals are working very closely together in an environment where competitiveness is high, in terms of promotions and/or rewards. This, combined with the social indicators of success and failure, leads to a continuous state of stress, releasing more cortisol in the body. At the time of organisational change, the problem becomes more pronounced as there is a lot of uncertainty and ambiguity leading to incremental stress.

Once trust is established by an open communication and people are primed to be honest, frank and open in their interactions, collaborative spirit will follow suit. However, if the rewards are individual based, then it may dampen and sometimes throttle the collaborative efforts required at the time of change management. Hence, there is a need to follow through with appropriate team rewards to emphasise the importance of teamwork. When there is team reward, there is more motivation for the team members to be more in sync and ‘resonate’ with each other and collaborate for best results.

**Resilience**

Business leaders and HR professionals would agree that the most resilient leaders are those who faced severe challenges and many failures. The difficult challenges and failures help them learn skill sets required to be resilient. When a change initiative is ongoing, there will be a lot of setbacks, and leaders and teams need to be resilient and come back every time with renewed vigour to keep the process going.

The ways to improve resilience are many. As per the research by Shawn Achor, our thinking brain can process about 40 bits of information per second. Compartmentalising the information we are being bombarded with and the corresponding work is a good strategy to deal with the information overload. All the resources of our thinking brain are available for each task if we focus on one task at a time, thereby reducing the cognitive overload, something that Rich Fernandez, the founder of Wisdom Labs, terms as serial mono-tasking.

Continuous connectedness is also a big drain on the brain, increasing the stress levels manifold and resulting into increased cortisol. As opposed to our circadian rhythms, health psychologists have a term ultradian (hourly) rhythm for our energy levels and mental focus and clarity. There is typically a 90–120-minute cycle of waxing and waning of these levels. So it is a good strategy to observe these cycles and take breaks of a few minutes, for better recovery of mental resources.

Another great strategy is mental agility. Mental agility can be simply put as the ability to switch the neural networks in order to be able to respond rather than react in stress situations. The simplest way to achieve this is to label our thoughts and emotions. This helps us in managing the stressors better.
Labelling the thought—‘I am exasperated’, ‘This is too much to handle’, ‘How much more work do I need to put in, I wonder’—will gradually lead to a more coherent thought process like ‘How much more is there to be handled’, ‘What more is required to be done’, ‘Who all I need to get in touch with’. Instead of a mishmash of thoughts and all stressors bombarding together, taking a step back and acknowledging that one is stressed, will slowly decentre the stressors and lead to a coherent thought process, and increase the ability to respond, rather than react.

**Decision-making**

Decision-making is a key skill for leaders. In fact, the most integral aspect of leadership is about taking good decisions, in a timely fashion, to make most of the opportunity presented. It may sound counterintuitive, but today we know the brain takes maximum shortcuts in decision-making. Thinking and logical reasoning, two important requisites for decision-making, are the most energy-intensive mental processes. Human evolution followed a process wherein the brain and the body try to conserve as much energy as possible. Hence, most of the routine tasks run on autopilot. For better, or for worse, our brain has devised various systems to apply the same logic to everything we are required to do, even higher brain functions. Decision-making also follows the same logic. There are various tools that are employed by the brain to help automate this process as well such as habits and heuristics. Habits take a long time to be ingrained. Based on repetitions, the neural networks become very strong over time.

With an organisational change going on, there is a need for everyone to bring in a change in their thought process and established behaviours. For employees in the leadership pipeline, this is a great opportunity to practise new behaviour and new ways of doing things, so as to change the existing neural patterns. For every new task and new challenge ahead, they should observe the instinctive response, explore new perspectives, evaluate them with respect to the change and with the enhanced responsibility of leadership, and then adopt the best possible solution. This will lead to weakening of the existing neural network and formation of new paths.

Decision-making in itself is a vast topic, and we have covered one basic aspect of neuroscience that has the maximum impact on the decision-making process. Another important factor in decision-making, that is, emotions. Neuroscientist Anotnio Damasio made an interesting discovery while studying people with damage to the part of brain that generates emotions and thus they could not feel emotions. At the same time, they could not make the simplest of decisions like what to eat between two given options, even though their logical reasoning was intact. This gives strength to the theory that decision-making is also emotional and keeping this in mind will help leaders in evaluating whether they are getting into the same folly.

**Conclusion**

The work of V. S. Ramachandran on phantom limbs gives great insights into the application of mirror neurons and its impact on neuroplasticity. It points towards the concept of alternate reality, which is a key understanding from the field of neuroscience for leadership. By alternate reality we mean the perspective that the reality of the world, and how our brain actually perceives it can be different at times. Understanding the biological basis of behaviour will help in bridging the gap between the reality of the world and the alternate reality, thereby enhancing the effectiveness of leaders and help budding leaders
in their leadership journey. We sincerely hope and believe that the future research in neuroscience will provide more and more pieces of evidence as well as insights to manage these behaviours for creating more effective leaders.

References


Authors’ Bio-sketch

Kiran C. S. has more than 12 years of experience in the area of human resources. He has handled leadership roles in diverse portfolios of human resources such as organisational development, performance management and employee relations. He is certified in the administration and interpretation of various psychometric tools such as Hogan assessments, FIRO-B, MBTI and thematic apperception test. He is also credentialed as SHRM SCP. Kiran is an MBA in human resources and master’s in applied psychology. He is currently heading the HR function for West Zone of Hindustan Petroleum Corporation Limited, a Fortune 500 organisation. Kiran can be contacted at cskiran@hpcl.in. His twitter handle is @focuskiran
Parul Tripathi has a decade of experience in sales and marketing in Hindustan Petroleum Corporation Limited, a Fortune 500 organisation. She has handled there key zonal and national profiles and was instrumental in quite a few key change initiatives in her vertical. She is an ICF–ACSTH-certified coach and also a certified Happiness Coach from the Berkeley Well-Being Institute, California. She also has a master’s in applied psychology. She has a deep interest in positive psychology and behavioural neuroscience and has been applying these principles in her coaching practice. Parul can be contacted at tripathi.parul@gmail.com
Neuroscience and HR Concepts and Applications

B. S. Rao

Abstract
Every company is created to address the need of the consumer that exists for a long time in the market and retain the leadership position in their market segment. Consistently companies are failing on this. Today companies invest a good amount of time and effort in building the state-of-the-art manufacturing and best of technologies for the ease of doing business. The core of all these to operate and implement is the people. How many companies are able to invest proactively on people to think better and find ways to retain their position. In my observation, the companies who invest more on people who can think better and come out of their limitation are able to reap the benefits. The neuroscience-based executive coaching consistently gives an ROI (return on investment) from 5 to 42 times based on the situation and ability to monetise and execute the new thinking.

Key words
Strategy execution, change management, executive coaching, Fortune 500 companies, ICF, predictable results, human resource management (HRM)

Multitasking, limited resources vis-à-vis time constraint, and competition and sustaining growth are some of the wisdom-age challenges. These are either at an individual or at an organisational level; however, collectively they have a quantum impact. Globalisation has converted the world into a flat world and has removed all the barriers to trade. Be it any industry, whichever organisations are proactively adapting the change to known and unknown challenges are emerging as the winning organisations.

Human evolution moved from the agricultural to industrial to the knowledge era. All these transitions have their own change management to achieve higher efficiency in their respective eras. Now, mankind is in the gradual transition from the knowledge era to the wisdom era. Any transition has its own level of challenges, that is, the ability to think and act using knowledge. In the wisdom era, knowledge is abundant and the issue is how the mankind is converting the knowledge to higher effectiveness and sustainability. In the wisdom age, the centre of excellence is the effectiveness of manpower rather than machines and infrastructures. In the wisdom age, organisations which are focused on effective and empowered manpower development are becoming the industry leaders, thus commanding the world in their fraternity.
Today, the life of companies is shortened due to poor resource management, ability to stand against the competition or adaptability to consumer expectations or poor research and development (R&D) and innovations, and the threat of merger and acquisition (M&A). In this transition, employees are not able to cope up with such unforeseen challenges and they seek the support to achieve their highest priorities. Today, small groups of people are challenging the globally renowned companies. In India, companies such as Ola and Flipkart are standing as leaders in their domains. Looking at these, many of the companies are converting their workforce as micro-enterprises with the freedom to think and act to achieve the highest performance. This approach is making them highly profitable and they get the strength to compete as a company.

Human beings are grown in different cultures, perceptions, attitudes, belief systems, value systems and inhibitions. These are unknown and hidden at the individual level and have a great impact on their productivity. Various training and competency matrices have come into place through a great amount of research and support for the right fit for the job function. These processes gave the results for some time but today their impact is very limited. This leads to finding the ways for individuals and leaders to better understand the root cause of identifying the higher human potential. A good amount of research has been undertaken in order to understand the human brain, which is the central point of higher effectiveness. Companies that are in innovation and solving the society’s problems are acquiring wisdom-age principles and, therefore, getting valued. This has become a threat to large companies and they need to follow the wisdom-age principles to sustain and compete.

In the wisdom age, people are knowledgeable and feel that they are equal as well as competent and reluctant in taking advice. In general, people pretend in receiving the advice and feel immediately that they are more intelligent and knowledgeable than the advisor. Over a period of time, they started feeling that there would be better ways to solve problems than taking advice. This advisory role culture was not giving the desired results. Therefore, research was undertaken for increased human effectiveness, which resulted in neuroscience principles.

**Neuroscience Principles**

Neuroscience principles evolved to understand the principles and functionality of the human brain. Neuroscience is the study of the function of the central nervous system and the brain. This is an evolving science which enables us to understand the roots of human behaviour and the related results. After extended research in the area of neuroscience, it was revealed that the human brain has the greatest potential to learn and achieve higher efficiency. This became possible through the discovery of neuroplasticity. Neuroplasticity has revealed that the adult brains are much more plastic, that is, they can change as a result of experience. Science has evolved into how to tap and train the brain to achieve the desired effectiveness. In the past, it was considered that, beyond a certain age, learning would be stopped and there would be difficulty in changing the human behaviour. With this in mind, a lot of tools emerged to expand the human potential.

**Human Resource Management**

Human resource management (HRM) is the term used to describe formal systems devised for the management of people within an organisation. It is defined as the process of managing employees in a company, including hiring, training, motivating the employees and firing the people due to poor performance. HRM is a means to hire employees and train them to get the best results.
The other key area of HRM is performance measurement, a process to understand the people’s contribution to the organisational effectiveness by collecting, analysing and/or reporting information regarding the performance of an individual, a group, an organisation, a system or a component. There are several training programmes that have evolved to bring the awareness, skills, tools and knowledge among the employees. All such programmes have, however, limited impact, as everyone has individual constraints to perform in their job function. The initial performance impact of these initiatives is around 40 per cent. Such a performance keeps diminishing over a period of time—sometime diminishes within a few months—and varies from individual to individual. Hence, organisations were searching for high-impact interventions for high-impact performance for a long period of time. Based on the performance appraisals, the training programmes were arranged for the respective competency enhancement. Although this has been leading to improved results, organisations are forced for even a better performance towards sustained superior performance.

The executive decision-making (ability to quickly react to the competitiveness, quality of the decisions and the predictability of results) and executive presence (influence others and drive results) are critical to the day-to-day business sustainability. Organisations realised that the enhancement in the areas of the executive decision-making and executive presence can improve their performance significantly. These functions are with the leadership team, and even with a small degree of improvement in these areas, organisations can achieve quantum improvement.

The challenge is to find which specific measures will enable you to improve your business. Key performance indicators (KPIs) are at the heart of any system of performance measurement and target setting. When properly planned and implemented, they are one of the most powerful management tools available to growing businesses. Through various interventions, it is identified that executive coaching is a high-impact programme to improve the KPIs.

**What Is Executive Coaching?**

Executive coaching is a professional relationship between a trained coach and a client (who may be an individual or a group) with the goal to enhance the client’s leadership or management performance and development.

Coaching has been defined in many ways. The essence of coaching is as follows:

1. It helps a person change in the way he/she wishes to and helps him/her move in the direction he/she wants to move.
2. It supports a person at every level in becoming who he/she wants to be.
3. It builds awareness, empowers choice and leads to change.

---

**Coaching is unlocking a person's potential to maximize their own performance. It is helping them to learn rather than teaching them.**

—John Whitmore

The coach helps clients to achieve their personal best and to produce the results they want in their personal and professional lives. Coaching ensures that clients can give their best, learn and develop in the way they wish. The coach need not be an expert in their clients’ field of work.

Having involved in many industry verticals, my interactions with the Board members, CEOs and leadership have always been insisting towards predictable business results irrespective of market conditions and people’s performance issues. We used to help them with various competency enhancement
programmes. We evolved towards measuring the business results and found that the impact stands for a limited period of time. After doing the survey, people shared that their learning was selective, based on the current challenges and implementation of the learning. Later on, they did not show interest in translating their learning into a business practice. During that period, we brought the neuroscience-based coach-training programme to help the leaders to coach themselves as well as to have impactful conversations with their team. This improved the relationship of the leaders with their teams, reduced the meeting time and the leaders started feeling highly energetic as they understood the issues and the solutions to bridge them. We extended the coach-training programmes to executive coaching practices. We coached several industry leaders across India, as well as outside India, and results were consistent and phenomenal.

When we started coaching at the leadership level, the return on investment (ROI) was around 85–200 per cent based on their decision-making level and the impact they were able to bring in to that situation.

The common limitations at the leadership level, whose degree varies from industry to industry and people to people, are as follows:

1. Inability to take the right decision at the right time.
2. Cultural barriers and low self-esteem while interacting with bosses to share their insights.
3. Inability to work on opportunities to be competitive and cost-effective.
4. Inability to manage teams for higher productivity.
5. Delayed actions in conflict-management situations.
6. Not ready to manage high-performing teams.
7. Inability to adjust to the new organisational culture or adjusting during M&A.
8. Inability to build the trust within the people and teams.

Case Studies

I would like to share a few of the case studies to get the in-depth issues that are hidden in the organisational system and how coaching supported the organisations to achieve their desired results.

Case Study 1

A large MNC took the decision to manufacture their vehicles in India to bridge the current gap after a good amount of research in the market. Then they decided to hire the talent from different organisations. The company expected that having the talent from the best of the companies, who showcased their performance, can support their manufacturing much faster than anticipated. Months passed and there was no progress in their project, and worrying about it, the key stakeholders started exploring the reasons. When the organisation approached us about the reasons and for the issues and solutions, we started interacting with the teams as well as individuals. In this case, we used various ways to unearth the issues and we decided to use the one-on-one brain-based coaching model in the identification of the root cause and the common issues.

Post the one-on-one coaching at the leadership level, the findings are as follows:

Every leader felt that his own best practices were ideal as he had produced the best results and not aligned and believed in the new company’s vision and mission in achieving the common goal. Due to the lack of buying into the new company’s vision, mission, and vehicle design, none of the leadership was
able to sign on the next steps towards manufacturing-facility infrastructure. This common issue prevailed among the leadership level and, hence, our project could not take up as desired.

The findings during the executive coaching are as follows:

1. Individuals lack the self-confidence to share their inner thoughts.
2. Fear of failure on the new ideas due to their individual past-product failures and successes.
3. Could not find the ways to overcome the team’s conflicts.
4. Perceptions, past cultures, and lack of confidence on the new line of products—if the products fail what will be their name and fame in the market.
5. Fear of losing the position by becoming aggressive and strong in their views.
6. With the ability to articulate, convincing other teams and poor skills in managing conflicts during the meetings.

When we shared the leadership findings, the CEO felt that this project delay had great consequences on the investments and had impacted his reputation as a CEO. We had requested for eight weeks’ time to bring the synergy and bring the momentum towards project execution.

Through various interventions with one-on-one executive coaching and group coaching, we brought the synergy between the team members, and the team came up with the better featured model to suit the Indian consumers.

Without executive coaching, the project would have taken much longer time and project would not have taken off. Post this intervention, there was not any issue in aligning with the new company’s vision, mission, quality and providing customer services. After a year when we did the ROI study, we found that it was multifold ROI, and the leadership was synergetic in coming up with better designs beyond the global standards and expectations.

I feel, without neuroscience-based coaching, the results would not have been much faster and predictable. I strongly feel that executive coaching is a principle-based process to unearth the great human potential to achieve sustained superior performance.

Case Study 2: Information Technology

The MNC started their world’s second largest customer support centre in India. Over a period of time, the company had expanded their team. This centre was expected to deliver the machine critical support to their global customers’ business operations. This centre was critical for the company to stand against the predefined global customer support standards. Employees were highly paid with never seen perks, with a view that they would never leave the organisation. After a couple of years, the organisation started losing highly talented employees and their replacements got very critical.

This organisation did not believe in any training interventions which could have solved their current issues. The organisation had always believed that high salaries would make their talent to stay for the long term and employees would not require any additional skill than the advanced technology skills. With a good amount of discussions, organisation allowed us to interact with the key people to assess the issues. It was very difficult to interact with the employees as their frustration level was high. Employees felt that money was not giving them the peace and their inability to work in machine-critical situations added a great amount of stress which was unbearable. Hence, they started quitting after completing their financial priorities.

After deep interactions with the employees, we concluded to offer executive coaching to them. After two to three sessions, the employees could find their root causes of the issues with self-awareness.
These new insights made them implement their findings in their personal and professional areas. The implementation of these findings gave them confidence and they started sharing their experiences with their colleagues.

These few employees became champions for us and attracted more employees to support our initiatives. As a result, we decided to offer executive coaching to across the organisation. This gained a great momentum and built the trust with the employees and the leaders.

As part of the action plan, we started developing the executive coaches internally to build the pool of internal coaches. Over a period of seven months, the following results were obtained:

1. The stress level of the employees reduced as they were able to discuss and solve the customer’s issues with ease and much faster than in the past.
2. Employees became more proactive to the customer’s needs and became trusted advisors, which resulted in more revenue.
3. Employees became more synergetic and started best practices, which became the organisational standard operating procedure.
4. Improved high customer satisfaction made global customers to choose Indian support centre as their preferred choice.
5. Employees’ work-life balance came to new positive heights, and attrition reached close to the zero level.

After this success in India, executive coaching became the part of their global practice. The employees became a great resource to the global R&D and thus helped designing the products for higher stability and came up with efficient supporting tools.

Having seen the above success stories on the basis of coaching practices, there are areas where coaching did not give the expected results in other organisations.

One of the global financial companies started their operations in India. As part of their global HR practices, the company wanted to develop the future leaders in India who were to be nominated by the global head office.

As we started working with these future leaders, we did not get the required commitment or the support for the executive coaching process.

Following are the observations and confessions from the leaders of this organisation:

1. Leaders felt that they were already successful by then in their carrier, and there is no need to waste their valuable time by attending the executive coaching sessions.
2. Few leaders felt that executive coaching is a process to identify their shortfalls and their bosses were curiously using these during the performance appraisals.
3. Few leaders were not ready to confess their areas of improvement due to low self-esteem.
4. Few leaders felt that the coach did not know their internal organisational issues and the required domain knowledge; hence, coaching might not be effective.
5. Few leaders had a strong belief that, after a certain age and experience, change was not possible and there was no necessity for any change in the future for them.

Success Factors for Better Results from Executive Coaching

A coach should believe that there is a hidden great human potential within each and every individual. People are intelligent and have resources to be effective in their profession. For every executive coaching,
the coach needs to assess the client’s strong desire and create the pathway in order to support them to achieve it. If these are not assessed properly, there would be a delay in getting the desired results.

Main tools for successful executive coaching are as follows:

1. Creating the client awareness through coaching tools than providing only the advice. This requires a good amount of coaching tools, skills and desire to bring the desired results.
2. Identifying the coaching areas and assessing the same on every coaching conversation as these keep changing and need assessment until the strong acceptance.
3. Need to build a trust at all time in the coaching process to achieve the desired results.
4. The coach should believe at all times that people are intelligent and resourceful to choose their best in their life.
5. The coach should build strong active listening skills to understand the clients’ agenda and move from the clients’ words to identifying their hidden areas.
6. The coach should create strong insights with the powerful questioning skills.

Having coached many Indian and global clients, I strongly believe that coaching has become a highly matured profession. This profession is double-sided learning—for the coach as well as for the client. I have seen many coaches who learned their best practices from their clients. For additional information on coaching, you can refer to www.coachfederation.org.

Author’s Bio-sketch

B. S. Rao has more than 32 years of experience across business verticals. He is passionate about solving the common people’s issues using advanced technologies. Believing in this, he has implemented several complex large-scale projects across business verticals which led to the ease of living.

Having implemented large-size complex IT projects across the world, he felt that implementing the technology was easy and making people work to accept the new change was a big issue. With the passion to understand the human behaviour, he moved his profession from IT to management consulting industry. With his passion in this area, he customised many training and consulting programmes to get the desired results. Rao had supported many global CEO, leaders and senior management across the business verticals on Coach Training as well as offering the Executive Coaching. Using the change management, he implemented large-size interventions and showcased the predictable organisational results.

Today, B. S. Rao is highly regarded in the areas of strategy and execution, who aligns organisations with the common goal and develops leaders to achieve their highest priorities. He offers executive coaching to chairpersons, leaders and large-sized companies.
Applications of Neuroscience in Coaching

Piyush Dixit¹ and Prachi Dixit¹

Abstract

The article contains a brief description of some basic principles of neuroscience with hints and examples of how they can be applied to executive coaching. The author has been using these principles actively in his coaching practice for the past five years. It is hoped that this article will motivate new and experienced coaches to invest in learning and applying these (and other) neuroscience principles in their coaching practice.

Keywords

Triune brain, amygdala hijack, neurotransmitters, hippocampus, neuroplasticity

Introduction

The study of the human brain has fascinated humankind for centuries. The earliest written record is from 1700 BC (https://en.wikipedia.org/wiki/Edwin_Smith_Papyrus). The first free-standing neuroscience department (then called psychobiology) was founded in 1964 at the University of California, Irvine, by James L. McGaugh, and Paul D. Maclean formulated his Triune Brain theory in 1960. Many writers attribute the start of business coaching to Timothy Gallwey in his book (Gallwey, 1974). However, business and executive coaching came of age with the establishment of the International Coach Federation in 1995. With rapid advances in neuroscience in the last 10–15 years, the world of coaching has benefited a lot, not just validating what was known intuitively but also validating it with science.

Basic Structure of the Human Brain: The Triune Brain

The nervous system (brain, spinal cord and nerves) starts developing within four weeks of conception. The growth process continues through birth, childhood, adolescence and adulthood. It is only after the age of 25 that the neocortex (the topmost layer of the brain) is fully developed.

The triune brain (MacLean, 1990) is a very basic model of the layers of the brain as it evolved through time. There are three basic layers in the brain:

¹ Tanmaatra Consulting, Bangalore, India.

Corresponding author:
Piyush Dixit, Tanmaatra Consulting, Bangalore, India.
E-mail: piyush.dixit.in@gmail.com
• Reptilian Brain (age: 500 million years ago)
  o The lowest layer that controls breathing, heart rate, body temperature and balance
  o Drives the ‘fight or flight’ instinct

• Limbic Brain (age: 150 million years ago)
  o The emotional centre of the brain containing:
    ▪ Amygdala: Key role in processing emotions
    ▪ Hippocampus: Contains our library of long-term memories

• Neo-cortex (age: 2–3 million years ago)
  o sensory perception, generation of motor commands, spatial reasoning, conscious thought and language (in humans)

Coaching requires the extensive use of the neo-cortex for generating awareness, and designing and planning actions. If a coaching client is experiencing ‘stuckness’ due to an amygdala hijack (see the section ‘Survival Gone Awry’), coaching becomes impossible from difficult.

![The Triune Brain](https://qbi.uq.edu.au/brain/brain-anatomy/limbic-system)

The Science Behind Empathy (Mirror Neurons)

Research in the last 20–25 years has provided increasing evidence of the existence of mirror neurons (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3510904) which allow us to experience thoughts and feelings of another person inside our brains.

Coaching presence (one of the coaching competencies; see https://coachfederation.org) leverages empathy to enable rapport formation and opening up of a coaching client. In this way, mirror neurons are key to coaching presence.
Ahmed (name changed) was a senior leader in a demanding role for a high-technology firm. He was responsible for information security and did his job very diligently. The nature of his role required looking out for security violations and challenging the relevant stakeholders to look at them.

In a town-hall meeting, one of the senior leaders (Alwyn) made fun of him publicly for having links with a terrorist organisation. It was a very insensitive comment made in a poor taste. Ahmed went to Alwyn and conveyed his discomfort with the comment the leader had made. The leader assured him that it was just a joke and not to take it to heart.

After a couple of more instances of similar ‘jokes’, Ahmed could no longer stomach it and went to the HR department. Initially, HR supported him, but not enough action was taken to assuage his feelings.

In his second coaching session, Ahmed opened up to me, saying, ‘I have not told even my wife about this. I am wondering what to do next. If I take this to the Ethics Committee, it may have serious impact on this man’s career, but I seem to have no other choice.’

Ahmed’s candour was very touching. It came about, primarily, from the trust that he placed in me, which was generated by how well I had understood his thoughts and feelings. I allowed him to express his intense feelings for a while, nodding and paraphrasing what he said, until he was able to think about the pros and cons of his action more clearly. The change from the overwhelming feeling of being humiliated got slowly replaced by an ability to look at options. This could not have happened without empathetic listening.

**Survival Gone Awry**

An amygdala hijack (Goleman, 1995), as depicted in Figure 2, disables the neo-cortex, thus taking away our ability to be aware, think and analyse.

![Figure 2. Amygdala Hijack](https://springgrovemnheritagecenter.org/ellul-on-propaganda/amygdala-hijack/)

Hence, coaching cannot happen until the effect of the hijack has gone away and the neo-cortex functioning is restored.

Raju (name changed) was a calm and composed leader, but had an aggressive boss (Richard) who did not mince words when it came to judging others, especially his team members.
Raju had an overall agenda of improving his executive presence over the course of coaching and was moving along steadily. In his fourth session, he told me that he was very disturbed and undergoing a lot of churn. He felt quite low because he was attacked by his boss in public view, for not making a presentation in the way his boss thought was impactful.

Richard, evidently, was under the influence of a ‘hijack’ and was dumping his emotions freely on Raju. He was enraged at his perception of the quality of what he saw Raju presenting, and he felt that Raju, whom he trusted, was ‘letting him down’.

Richard’s reaction was sudden and severe for Raju, who felt quite miserable. He had known logically that his reaction was out of proportion to the issues raised against him, but he could not help being ‘hijacked’ in his turn.

I spent a good part of the session listening to Raju and getting in touch with his pain. After nearly 30 minutes of doing so, Raju was in better shape, and was able to start seeing the constructive aspects of the feedback without being destroyed by the emotional churn his amygdala had stirred inside him.

**Happiness Chemicals**

Figure 3 shows the primary neurotransmitters for happiness (Breuning, 2012).

![Happiness Chemicals](http://moto-r.info/endorphins-psychology.html)

- Dopamine is released when we experience ‘achievement’ (or anticipate that).
- Endorphin is released to manage/reduce ‘pain’.
- Oxytocin is released when we feel a sense of bonding or ‘intimacy’ with another.
- Serotonin is released when we get feelings of high ‘status’ or self-esteem.
- Cortisol (not shown in the figure) is released in response to a ‘stress’ situation.

In a coaching interaction, at least one (if not all) of the above is relevant.

- Clients often discuss situations that are causing stress, and the coaching session invariably provides stress relief by directing the client’s energy towards a goal where the stressor has been dealt with (cortisol and endorphins).
• Coaching presence and active listening foster openness and intimacy in clients (oxytocin).
• Acknowledging the client for what they have done, and designing and planning actions at the end of a session helps them anticipate achievement and feel greater self-confidence (dopamine and serotonin).

**We See Things as We Are (Hippocampus)**

Emotional memories stored in the hippocampus (Figure 1) guide our values and beliefs. They create mental filters to our view of the world, making it impossible to see people or situations in any other way (Figure 4).

![Filters to Our World View](https://thekingbook.wordpress.com/2014/03/06/point-of-view/)

During a coaching session, reframing is used to review our experiences to find more positive alternatives. This is often what a coach does using powerful questions and direct communications. When the client gets new awareness in this way, he/she is motivated to find ways to move forward towards his/her coaching goal.

**Experience Changes the Brain (Neuroplasticity)**

The process of initiating and experiencing change in the client is central to the coaching process. The awareness created during a coaching session leads to designing follow-up actions (actions here include reviewing limiting beliefs). When those actions are carried out, new patterns are formed in the brain. This is possible because our brains have neuroplasticity and that is leveraged by clients in their process of growth or movement towards their goals.
Brain Health

The foregoing discussion clearly establishes the relationship between coaching effectiveness and a healthy brain.

Brain-derived neurotrophic factor (BDNF) acts like a fertilizer for the brain and can be boosted by the following simple factors (courtesy Dr. John Da; see https://drjohnday.com/10-ways-to-boost-brain-function-with-bdnf/):

- Regular exercise
- Adequate (7 hours) sleep
- Appropriate nutrition
- Novelty
- Mindfulness
- Relationships

Conclusion

The foregoing discussion clearly establishes the value of neuroscience in informing the process of coaching. It provides a scientific basis for some age-old intuitive wisdom while providing a basis for creating new awareness for the client in a coaching session.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

References


Authors' Bio-sketch

Piyush Dixit has a B.Tech in Electrical Engineering from IIT Kanpur, an MS in Computer Science from University of Maryland and a post-graduate diploma in management from IIM Bangalore. After working in software engineering for 30 years, he switched his career to pursue his innate passion for people development full-time through executive coaching and corporate training. He has completed more than
1,000 hours of coaching and 1,000 hours of training/workshops for corporate leaders and managers. He is a full time member of International Coach Federation (ICF) and International Transaction Analysis Association (ITAA), and has been certified as a Professional Certified Coach (PCC) with ICF and a Certified Psychodrama Practitioner (CPP) with Vedadrama India.

Prachi Dixit has a Master’s in Clinical Psychology from Allahabad University. She has been working as a life coach for nearly 20 years with individuals and couples in the areas of marital counselling, grief counselling, child sexual abuse, depression, anxiety and so on. She is a full time member of International Coach Federation (ICF) and International Transaction Analysis Association (ITAA), and has been certified as an Associate Certified Coach (ACC) with ICF and a Certified Psychodrama Practitioner (CPP) with Vedadrama India. In January 2013, Piyush and Prachi co-founded their partnership venture Tanmaatra Consulting in Bangalore, India.
Applications of Neuroscience for Managing Affective State at Workplace

Sonia Baloni Ray

Abstract
This article is an effort to bridge the gap between two research fields, namely organisational behaviour and neuroscience. Organisational behaviour corresponds to the study of human behaviour at workplace, which is significantly modulated/controlled by the affective state of individuals. Neuroscience, on the other hand, is a multidisciplinary field of biology involved in the study of the nervous system. Research in the field of neuroscience has provided valuable insights into the mechanisms of emotion processing and psychopathologies of various affective disorders. These findings, although nascent, can be directly or indirectly extended in an organisational setting. This article begins with a review of different forms of emotions at workplace, followed by its implications in the productivity of an organisation. Further, this article explores the ways in which research in the field of neuroscience can be extended in an organisational setting to improve the overall affective state of individuals at workplace, thereby the efficacy of an organisation.

Keywords
Neuroscience, organisational behaviour, affective state, emotion processing

Introduction
Communication is an integrative part of human existence, and its ability and efficiency are highly dependent on the affective state of people around us. In a crowded place, we would rather approach a smiling person for directions or any help than a person with a frowning or indifferent expression. Therefore, an affective state, to a great extent, guides our behaviour (Ekman & Cordaro, 2011; Organ & Konovsky, 1989) in society, which in turn affects others’ behaviour and emotions towards an individual. Emotions can be categorised into seven basic types: happy, angry, sad, disgust, surprise, fear and neutral (Ekman, 1994). All other emotions such as joy, contempt and euphoria are considered as variants of above basic emotions. Emotions can be represented as two basic dimensions, namely ‘valence’ and ‘arousal’ (Russell,
Valence corresponds to the nature of the affective state and is represented as positive or negative. Happy is a positive valence emotion, whereas angry, sad, disgust, surprise and fear are considered negative valence emotions. The extent of activation of an emotion—that is, the strength or intensity of an emotion—is represented with an ‘arousal’ dimension.

Decades of research in the field of psychology, social sciences and cognitive sciences have helped establish a framework of relationship between human behaviours and their affective state. Social cognition and judgement are highly influenced by the affective state of an individual (Baron, 1987; Bower & Forgas, 2000) and so is the information-processing ability (Forgas & George, 2001). These studies provide insights into the dynamics of human behaviour, which can be efficiently applied to professional scenarios, where a greater part of human existence is attributed to teamwork. The productivity of a team is as efficient as its team members or employees, which are the building blocks of an organisation. However, each employee is an individual with his/her own personality traits and family background. They react differentially to similar situation (Ekman & Cordaro, 2011). Therefore, the productivity of an organisation depends on efficient teamwork, which is further contingent on the subjective well-being of an employee (DeNeve & Cooper, 1998) and is highly influenced by the overall emotional quotient of workplace (for review, see Ashkanasy & Dorris, 2017). The emotional state at workplace can be assessed at five different levels (Ashkanasy, 2003). The first level corresponds to an employee’s change of emotion over time as explained by the appraisal theory of emotion (Scherer, Schorr, & Johnstone, 2001) and affective events theory (Weiss & Cropanzano, 1996). The second level of emotions at workplace exists because of difference in personalities or attitudes between employees and is commonly measured by the emotional intelligence of an individual (Mayer, Salovey, Caruso, & Sitarenios, 2001). Studies have shown a positive relationship between emotional intelligence and work performance (Schlaerth, Ensari, & Christian, 2013). The third level is defined by how emotions are perceived and communicated through the interaction among employees and is largely attributed to emotional labour (Ashkanasy, 2003; Hochschild, Irwin, & Ptashne, 1983). Emotional labour corresponds to a display of appropriate emotions to customers or clients by employees. It is seen more as a compulsion, is known to elude the real affective state of an employee and is also known to cause ill-health effects (Ashkanasy & Daus, 2005; Van Dijk & Brown, 2006). The fourth level of emotion quotient is measured in terms of the team and its leadership. Significant positive (Walter, Cole, & Humphrey, 2011) and negative (Kilduff, Chiaburu, & Menges, 2010) relationships have been observed between emotional intelligence and leadership effectiveness. Last but not the least, fifth level of emotional quotient can be observed at an organisational level and corresponds to the collective mood of organisational members and their attitude towards their leaders and overall organisation. An important fact to be noted in the Ashkanasy (2003) model of emotions at workplace is that, emotion at each successive level is a cumulative effect of the preceding levels. For example, emotions at the organisational level (level 5) will depend on the emotion at the team or leadership level (level 4), which in turn is dependent on the preceding levels. This clearly demonstrates that emotion plays a significant role—from the level of an employee all the way up to an organisational level. Organisational behaviour is represented across two extremes, namely counterproductive work behaviour (CWB) and organisational citizenship behaviour (OCB). CWB corresponds to the voluntary act of an employee against the interest of an organisation such as absenteeism, theft, sabotage and withdrawal. OCB, on the other hand, corresponds to the voluntary act of an employee to perform tasks that are beyond his/her job profile, and it can be beneficial to an organisation. Studies have shown that positive affect promotes OCB, whereas negative affect encourages CWB in an organisation (Spector & Fox, 2002). Also, CWB was observed more in individuals with high compared to low in negative affectivity (Penney & Spector, 2005). Hence, one of the biggest threats in an organisation is CWB, which is known to have strong associations with the stress at workplace.
Stress caused by work pressure contributes in building up negative affect at workplace (Haslam, Atkinson, Brown, & Haslam, 2005), leading to a greater risk of developing affective or mental disorders (Melchior et al., 2007) such as depression and anxiety.

Tellegen (1985) showed that low positive and high negative affects are major distinguishing features of depression and anxiety, which are marked by following symptoms: irritability, low self-esteem, decreased ability to concentrate and think, low energy, fatigue and so on. Studies in the field of neuroscience have contributed to understanding the pathologies and mechanisms of these affective disorders. For example, patients suffering from affective disorders have been shown to have high levels of stress hormone ‘cortisol’ (Izard, 1979; Vedhara et al., 2003), which is involved in controlling blood sugar levels, blood pressure and metabolism. High cortisol levels are also associated with hippocampal atrophy and impairing hippocampus related to learning and memory in humans (Lupien et al., 1998). Studies involving brain-imaging techniques like functional magnetic resonance imaging have shown that compared to healthy individuals, patients with depression in aggressive conditions have abnormalities in their brain regions associated, like the prefrontal cortex and hippocampus region, which are associated with mood regulation, learning and contextual memory (Davidson, 2003; Drevets, 1998). Patients suffering from depression also show significant loss of volume in the hippocampal region (Sheline, Gado, & Kraemer, 2003), which leads to the disruption of its functions such as sleep, circadian rhythms, fatigue and hunger. Depressive patients also have weaker connections between the anterior cingulate cortex and amygdala (Anand et al., 2005), which could lead to the failure of emotional regulation (Whittle, Allen, Lubman, & Yücel, 2006), resulting in motivation and affective disruption (MacDonald, Cohen, Stenger, & Carter, 2000). Behavioural studies, on the other hand, have shown that compared to non-depressive and non-anxious people, patients suffering from depression and anxiety tend to make negative judgements about future events (Gotlib & Krasnoperova, 1998) and are biased to negative stimuli (Joormann & Gotlib, 2007). Another study showed that as compared to healthy individuals, patients suffering from depression showed lack of motivation for reward due to their low anticipation for pleasure (Sherdell, Waugh, & Gotlib, 2012). These studies, taken together, demonstrate a direct relationship between disruptions in human behaviour and the pathology of the affected region of brain responsible for those cognitive functions.

Equally compelling have been the brain imaging studies of mindfulness, which corresponds to dispassionate, non-evaluative continuous awareness of sensations, emotions and thoughts (Grossman, Niemann, Schmidt, & Walach, 2004). It involves practising meditation and leads to changes in brain structures, especially hippocampus (Luders, Toga, Lepore, & Gaser, 2009; Wells et al., 2013), amygdala (Hölzel et al., 2009; Taren, Creswell, & Gianaros, 2013) and thalamus (Pickut et al., 2013) which are the loci of affective disorders. Imaging studies have also shown that mindfulness contributes to attention, emotional regulation and memory (for review, see Marchand, 2012). Mindfulness meditation has also shown decreased activation in negative emotion and increased activation in the parietal cortical area, which is involved in engaging attention (Goldin, Ziv, Jazaieri, Hahn, & Gross, 2012). An electroencephalogram (EEG) study conducted at a workplace with 25 healthy employees before and after practising mindfulness meditation showed a significant increase in positive affect (Davidson, 2003). Despite being in the nascent stage, these studies provide evidence that mindfulness meditation could be used to treat affective disorders and also contribute to the improvement of affective well-being of an individual.

The human resource (HR) department is an integrative part of every business organisation. One of the key responsibilities of the HR department is to manage the most valuable resource of an organisation—its employees. They usually cater to the needs of its employees by organising training programmes, high performance work practices (Appelbaum, Bailey, Berg, Kalleberg, & Bailey, 2000),
performance appraisals, conducting various recreational activities and so on. All these are compulsory, schedule events, but none of these take into account the real-time affective state of an employee. Studies in the field of neuroscience have provided valuable insights into the relationship of pathology of affective disorders to CWB. Therefore, it will be helpful to evaluate an employee not only for his/her performance but also for his/her affective well-being. However, affective well-being is difficult to assess on a day-to-day basis. This is because mostly people are not even aware of the fact that they are suffering from an affective disorder, especially at initial stages. Most of the symptoms of these affective disorders correlate with the CWB (Chen, Li, Xia, & He, 2017), which is usually taken as a sign of physical illness (Manning & White, 1995). Nonetheless, if these disorders are diagnosed at an early stage, then patients have a greater chance of complete recovery and will cause little damage to the overall efficiency of teamwork.

How can neuroscience help in managing and assessing emotions at workplace? As discussed before, studies in the field of neuroscience have enriched our understanding of associations of pathologies of affective disorders to the behaviour of an individual. This knowledge can be implemented directly or indirectly at workplace in the form of either diagnostic or preventive measure. Diagnostic measures would entail the assessment of the affective state of employees on a regular basis. This could include monitoring levels of stress hormones—cortisol and physiological parameters like blood pressure on a regular basis as this would indirectly help in assessing stress levels in an employee. Cortisol hormone can be easily measured through salivary samples. However, despite being robust, the implementation of regular medical check-ups and the measurement of stress hormone could be costly and would require significant investments on the part of the organisations. Another cost-effective methodology to assess employee’s well-being is a self-rating questionnaire. As the name suggests, a questionnaire has a set of questions tapping into different parameters, designed to measure the overall affective state of an individual. Given that the cortical pathologies of affective disorder manifest behaviour significantly, such a standardised questionnaire can be used to assess the affective state of employees. For example, the ‘Health and Work Questionnaire’ measures productivity, personal life satisfaction, satisfaction with supervisor and so on. ‘Endicott Work Productivity Scale’, a brief questionnaire, assesses impairment in employees with depression (Endicott & Nee, 1997). The ‘Work Limitation Questionnaire’ corresponds to measure the impact of chronic diseases on work performance (Despiégel, Danchenko, François, Lensberg, & Drummond, 2012; Lerner et al., 2001). Besides these, there is Depression Anxiety and Stress Scale (DASS; Bottesi et al., 2015) in three different versions: DASS-D, DASS-A and DASS-S for assessing depression, anxiety and stress, respectively (Brown, Chorpita, Korotitsch, & Barlow, 1997). Besides these, there are many other scales developed to measure personality traits (Costa & McCrae, 2008; Gosling, Rentfrow, & Swann Jr, 2003; John & Srivastava, 1999). These questionnaires in different combinations can be used on a regular basis at workplace to monitor the overall well-being of an individual and can be included as part of performance appraisal. However, the applicability of these questionnaires is contingent on how truthfully a respondent rates them. Therefore, stand-alone these questionnaires might not be accurate; nonetheless, they can be complemented by monitoring employee’s affective state through surveillance systems. The surveillance system is an integral part of each and every organisation with a primary motive to prevent and monitor unlawful activities. Therefore, there are recorded data of the day-to-day movement of each individual, most of which are not even used. But these data can be put into use for image and gait analyses, as the affective content is also encoded in human action or body language (Aronoff, Woike, & Hyman, 1992). Gait is usually studied using the five-point-light walker stimuli (Johansson, 1973) and is known to show activations in Superior Temporal Sulcus; Grossman et al., 2004), which in turn is known to have strong reciprocal connections with the amygdala (Amaral, Behniea, & Kelly, 2003) which plays a critical role in the assessment of the emotional content.
of a stimulus (Adolphs, 1999). For example, gait analysis with five-point-light walker stimuli showed that detection performance significantly depended on the emotional content of the gait (Atkinson, Dittrich, Gemmell, & Young, 2004; Chouchourelou, Matsuka, Harber, & Shiffrar, 2006) and was higher for angry gait. Similarly, the facial expression also forms a part of our body language and is one of the most robust ways of assessing the affective state. There are varieties of software packages such as Facelytics and Microsoft Azure to name a few, which are commercially available and which provide reliable affective state estimation through facial images. Taken together, gait and image analysis can help assess the affective state of service employees who have to practise emotional labour, which can significantly elude their real affect. Further, the application of neuroscience as preventive measures could be organising cognitive behaviour therapies (CBTs), mindfulness sessions and the like. CBT, traditionally, was used to treat anxiety disorder but now has been extended to treat overall well-being. It corresponds to the personalised assessment of personality traits and can be easily implemented at a workplace. Contrary to CBT, mindfulness sessions can be conducted as a group activity, which can improve the affective well-being of employees, irrespective of their affective state.

In conclusion, research in the field of neuroscience has supplemented our understanding of the mechanisms of human behaviour. This knowledge in conjunction with that from social sciences and cognitive sciences can be collaborated efficiently to design tools and protocols to manage the affective state at workplace. Clinicians traditionally use this knowledge to diagnose and cure various affective disorders. This knowledge can be easily extended to organisations by including a psychologist or a cognitive scientist as part of the HR team.

References


questionnaire. *Medical Care, 39*(1), 72–85.
meditation: Larger hippocampal and frontal volumes of gray matter. *Neuroimage, 45*(3), 672–678.
levels during human aging predict hippocampal atrophy and memory deficits. *Nature Neuroscience, 1*(1), 69.
depression and anxiety in young, working women and men. *Psychological Medicine, 37*(8), 1119–1129.
based intervention in Parkinson’s disease leads to structural brain changes on MRI: A randomized controlled
intelligence and leaders’ constructive conflict management. *Group Processes & Intergroup Relations, 16*(1),
126–136.
depression. *Journal of Abnormal Psychology, 121*(1), 51.
counterproductive work behavior and organizational citizenship behavior. *Human Resource Management
Taren, A. A., Creswell, J. D., & Gianaros, P. J. (2013). Dispositional mindfulness co-varies with smaller amygdala
and caudate volumes in community adults. *PloS One, 8*(5), e64574.
Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis
NJ: Lawrence Erlbaum Associates, Inc.
and consequences of affective experiences at work. In B. M. Staw & L. L. Cummings (Eds), *Research in
organizational behavior: An annual series of analytical essays and critical reviews* (Vol. 18, pp. 1–74). New


**Author’s Bio-sketch**

**Sonia Baloni Ray** is currently working as a post-doctoral fellow with Prof Narayanan Srinivasan at the Centre of Behavioural and Cognitive Sciences, University of Allahabad, Allahabad, India. She did her bachelor’s in zoology (hons) from Delhi University, masters in bio-informatics from the University of Allahabad and PhD in cognitive neuroscience from George August University, Goettingen, Germany. Her current research focuses on studying neurophysiology of attentional effects on motion and emotion perception using electrophysiological (EEG/ERP) and psychophysical techniques.
Neurological Underpinnings to Understanding and Dealing with Stress at Work

Mousumi Padhi and Kalpana Sahoo

Abstract
In 1992, a United Nations report had called work stress as ‘The 20th Century Disease’. The ‘always on’ economy of the 21st century has ensured that the prevalence of work-related stress is omnipresent even now like the mobile phones that perpetrate it. As stressors in the environment are continually present, what appears to be an antidote, is to change the response and have a more resilient response. In discussing resilient response, the article more specifically focuses on neuroplasticity. Neuroplasticity or ‘brain plasticity’ refers to the brain’s ability to change or adapt both physically and functionally throughout life by stimulation from one’s environment, behaviour, thinking, emotions, etc. The article is based on this plasticity and the contention that brain can be structurally altered through the practice of mindfulness and meditation to develop resilience to stress, and respond better to stress. The article draws from the recent findings in neuroscience to strengthen this argument.

Keywords
Stress, neuroplasticity, mindfulness, meditation

Introduction
In 1992, a United Nations report had called work stress as ‘The 20th Century Disease’. With the changing nature of work and workplaces, and the arrival of the 24/7 economy (Presser, 2009), it is no surprise that stress would have become a bigger problem today than it was two decades ago. According to the reports by the Health and Safety Executive, 526,000 workers suffered from work-related stress, anxiety (new or long-standing) in 2016–2017 in Great Britain. On the same lines, for the United States, the American Institute of Stress reports that the US industry loses over $300 billion annually due to the outcomes of job stress. As mobile devices, laptops ensure that work crosses over boundaries into all realms of life and becomes omnipresent, the prevalence of work-related stress also becomes omnipresent rather than being restricted to a particular country or state.

1 Xavier School of HRM, Xavier University Bhubaneswar ‘Xavier City’ Campus, Odisha, India.

Corresponding Author:
Mousumi Padhi, Xavier School of Human Resource Management, Xavier University Bhubaneswar, ‘Xavier City’ Campus, Harirajpur 752050, Odisha, India.
E-mail: mousumi@xshrm.edu.in
Need for Re-examining the Popular Models of Stress Management

Stress has been defined as a transactional process arising from real or perceived environmental demands that can be appraised as threatening or benign, depending on the availability of adaptive coping resources, to an individual (Holroyd & Lazarus, 1982; Lazarus & Folkman, 1984). The biological, behavioural and other coping responses resulting from stress perception and appraisal processes are responsible for influencing the risk of ill health or the resilience against ill health (McEwen, 2007). The physiological, psychological and organisational consequences of stress and stress management are well studied. To counter the effects of work-related stress and to help employees deal with stress, organisations have looked at a variety of methods ranging from primary prevention to tertiary prevention. Primary prevention of stress is by way of interventions that remove the stressors and prevent the manifestation of stress such as by clarifying job roles. Secondary prevention of stress focuses on developing individual skills to cope with stress better such as through training. Tertiary stress management techniques act on the consequences of stress such as remedial support.

Despite the rich literature on stress management, certain areas have seen no consensus or still require further study for theoretical and practical purposes. For instance, while severe cases of chronic work stress may lead to burnout (Maslach, Schaufeli, & Leiter, 2001) and researchers (e.g., Hallsten, Josephson, & Torgén, 2005; Norlund, Reuterwall, Höög, Janlert, & Birgander, 2010) have found the prevalence of severe burnout in representative working populations; yet despite abundant research, there is no consensus on how to treat burnout (Shirom, 2011). The practical relevance of further research can be noted from this instance from New York and Los Angeles. In these US municipalities, the relationship between job stress and heart attacks is so well acknowledged that any police officer who suffers a coronary event, on or off the job, is assumed to have a work-related injury and is compensated accordingly (American Institute of Stress).

Focus of the Article

As stressors in the environment are continually present, what appears to be an antidote is to change the response and have a more resilient response. In discussing resilient response, the article more specifically focuses on the neurological underpinnings. The basis of neurological underpinnings to stress can be traced to the work of Harris (1970) who established the brain–body communication through the neuro-endocrine system. Research in the 1980s and 1990s saw the hypothalamus and pituitary become the main focus of understanding stress responses (McEwen, Nasca, & Gray, 2016). While the earlier research looked at how the region of the brain is responsible for secreting hormones, the later research extended the focus to look at actions of hormonal feedback on the brain, to influence not only neurological but also cognitive and emotional functions throughout the brain. This meant that the brain and its complex sets of neurons were getting structurally altered as a result of chronic and acute stress (Sheline, Sanghavi, Mintun, & Gado, 1999). It becomes a vicious circle where the stressed and altered brain continues to trigger the production of hormones and which affects the working of various organs in the body (see Figure 1).

The brighter side is that, if the brain gets structurally altered to be able to respond to stress in a negative manner, then the brain can also be structurally altered to respond to stress in a more productive and efficient manner. Recent advances in neuroscience have explicated the structural alteration of the brain. As Harvard Medical School’s Dr Alvaro Pascual-Leone recently stated, ‘Neuroplasticity is an intrinsic
property of the human brain’. Neuroplasticity or ‘brain plasticity’ refers to the brain’s ability to change or adapt both physically and functionally throughout life by stimulation from one’s environment, behaviour, thinking, emotions, etc. The article is based on this plasticity and the contention that the brain can be structurally altered through the practice of mindfulness to develop resilience to stress and respond better to stress. The article draws from the recent findings in neuroscience to strengthen this argument.

**Figure 1.** Pictorial Depiction of the Relationship Between the Body and Brain

### How Is the Stress Response Triggered?

The brain and more specifically the amygdala and hypothalamus are the drivers of the behavioural and physiological response to stress (McEwen, 1998; McEwen & Gianaros, 2011). The amygdala is the centre in the brain which helps to generate, express and experience a negative, emotional reaction to an external situation that informs the rest of the body of potential danger (Shin et al., 2005). When a person senses an oncoming danger, the sense organs—eyes, ears, etc.—send the information to the amygdala that interprets the images and sounds, and sends a distress signal to the hypothalamus to activate the hypothalamus–pituitary–adrenal (HPA) axis, resulting in the release of glucocorticoids in the adrenal glands. The hypothalamus communicates with the autonomic nervous system that controls the beating of the heart, breathing, etc. As a response to stress, the heart starts beating faster, we start breathing faster, the lumen of the arteries becomes narrower and blood starts flowing towards the legs and arms to prepare it for the flight or fight response. The amygdala via its connections with the prefrontal cortex also plays a key role in the retention of emotional memories. A hypersensitive amygdala due to emotional memories can continue to provoke responses and send signals to the hypothalamus and in these situations, anxiety is created even when no threat exists (Mackinson & Young, 2012). Just like the continuously pressed down accelerator of a car continues to increase the speed of a car, with the continuous perception of threat by the brain, the HPA axis continues to stimulate in the same manner and produces stress hormones. This explains the phenomenon why even though the stressor is not present in the immediate environment, the body continues to be in a stress-like state, which is common in chronic stress and acute stress.

### Neuroplasticity or Changes in the Brain as a Result of Stressful Experiences

The brain not only triggers the stress response but is also a target of stress. Stressful experiences and circulating stress hormones change its architecture, gene expression and function through internal neurobiological mechanisms (Gray, McGuinness, & Owende, 2013; McEwen, 2007). It has been found that people with stress-related psychiatric disorder have a smaller hippocampus. The hippocampus is the
control room for sending signals in response to stress. The dendritic spines in the hippocampus become shorter and are less branched. These dendritic alterations are related to high levels of glutamate and glucocorticoids, leading to stress-induced changes in glutamate neurotransmission and influencing the cognitive processing power in the brain (Popoli, Yan, McEwen, & Sanacora, 2011). Chronic stress in the amygdala causes the dendrites to grow larger, more numerous and have many more branches, which increases its reactivity. More so, because this increase happens in the dendrites of the excitatory types of neurons. The amygdala thereby continues to pick up the minutest suggestion of stress and sends it to the hypothalamus to activate the HPA axis. This can be well explained by the analogy of an accelerator in a car being pressed down perennially.

The Good News About Neuroplasticity

The human brain exhibits the property of neuroplasticity, the ability to change the structure and the pattern of activity in significant ways not only in childhood but also throughout life (Siegel, 2010; Schwartz, & Gladding, 2011). This change in the brain is a result of experiences in life or even as a result of an internal cause such as through the thoughts we have (Widdett, 2014). The experiment of Pascual-Leone, Amedi, Fregni, and Merabet (2005) on virtual piano players showed that just imagining how to play a piano changed specific regions in the brain associated with the movement of fingers. Mere thinking could change the brain. These neuroplastic changes can also be adaptive and compensatory in nature (Bavelier & Neville, 2002; Pascual-Leone et al., 2005; Rauschecker, 1995). Research on sensory-deprived individuals such as deaf and blind have shown that the auditory cortex and visual cortex reskill themselves to take on new functions (Collignon, Lassonde, Lepore, Bastien, & Veraart, 2007; Merabet, Rizzo, Amedi, Somers, & Pascual-Leone, 2005; Theoret et al., 2004). For example, while the peripheral vision is not strong in people with normal eyesight, the same in the people who are deaf from birth has been found to be stronger. This is explained by Beagley and Davidson (2012) as the hitherto inactive auditory cortex taking on the task of registering visual signals to make itself useful. The specific argument is that the brain changes drastically to assign a function to a region in the brain that was ordained to do something else. Can this power be harnessed to deal with stress and be more resilient to stress?

Neuroplasticity and Stress

The implication of the above section is the fundamental argument of the article that the brain changes itself continually based on our experiences till the day we die; therefore, by changing our experiences we can proactively shape our brain. Dr Andrew Newberg’s (2010) research by way of scanning the brains of people such as Buddhist monks, nuns, chanting Sikhs who are in a deep spiritual practice like meditation or prayer shows that their frontal lobes are large and significantly different from the brains of others. This is the area of the brain that is required for focusing attention and memory. Dr Newberg’s experiments with adults who were facing issues with memory showed that just 12 minutes a day of meditation for 8 weeks also produced remarkable results. The research of Davidson and Lutz (2008) shows a similar finding. In fact, they further categorised meditation into focused attention (FA) meditation and open monitoring (OM) meditation. FA meditation is where a person focuses attention on a chosen point or object in a sustained manner. OM meditation is when one is more present in the moment or ‘non-reactively monitors the content of experience from moment to moment’ (Davidson & Lutz, 2008). The state of
OM meditation is akin to the state of mindfulness. Their findings revealed that expert meditators in FA meditation had less activation than novices in the amygdala, in response to emotional sounds. This meant that the amygdala was less prone to kick-start the stress response and trigger the HPA axis in expert meditators. If one had more hours of practice, then the activation was correspondingly that much lesser.

Davidson and Lutz (2008) also reported that as a result of long-term meditation, for a person involved in the performance of a task, there is a reduction in the propensity of the brain to ‘get stuck’ with a particular thought, and the brain is able to efficiently disengage from one thought and engage with the task demands at hand. This also means that the tendency to ruminate and brood about the past and future is curtailed as one is more involved in the present. This ability of being more aware of the present experience or mindfulness is what Daniel Siegel (2010) refers to as the response flexibility. Response flexibility is the capacity to pause before one acts because of ‘spaciousness of the mind to notice that an impulse has arisen and to disconnect from the automatic behaviour that usually follows’ (Siegel, 2010). Figure 2, represents how the mind takes a pause before acting impulsively on an impulse trigger. This is an antithesis of the fight or flight response of stress.

Mindfulness is described by Siegel as a way of intentionally paying attention to the present moment without being swept up by judgements. It also means cultivating the non-judgemental awareness of inner and outer experiences (Wilson, 2013). During the repeated practice of meditation, the neural circuitry involved in the voluntary control of attention is fortified. In this way, like other skill training that may lead to the neuroplasticity of the brain, meditation and mindfulness training may lead to the neuroplasticity of the brain to respond more effectively in the presence of stimuli.

A simple way of practising mindfulness techniques is that one is in the here and now and pays attention to what one is doing. Davidson and Begley (2012) too suggest that the strengthening of neural-network changes in the brain structure happens in a beneficial way when people pay close attention while practising a particular skill. Mindfulness practice has also shown to decrease the stimulation of our default mode network (DMN), which Wolkin (2015) refers to as our wandering ‘Monkey Minds’. The DMN is active when our minds are directionless as it goes from thought to thought, and can fire the amygdala. When DMN is still, there is less stimuli for the limbic system to fire the HPA axis in addition to the pause that it takes before automatically responding to the stimuli. The extended practice of mindfulness by practising even a simple skill like paying attention to what one is doing can enable the brain circuitry to evolve into a more resilient circuitry that does not impulsively react to stressors present in the workplace. It has also been found that mindfulness increases the cognitive capacity of the brain through a healthier hippocampus that can help an employee navigate the challenges of a 24/7 ‘always on’ economy. While it may not be possible for organisations to completely remove stressors from the employee’s pathway, but it is definitely possible to train employees on mindful meditation. Employees can also take up the onus for their own well-being through small amounts of mindfulness practice every day.

![Figure 2](image.jpg)

*Figure 2. Response Flexibility vis-à-vis Impulsive Response Where ‘A’ Is Impulsive Response and ‘B’ Is Response Flexibility*
Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

References


**Authors’ Bio-sketch**

**Mousumi Padhi** holds a Fellow Programme in Management degree from Xavier Institute of Management, Bhubaneswar, Odisha, for her doctoral work on Work–Family Interface. She teaches at Xavier School of HRM, Xavier University. Her research interests lie in gender, work family, work values, neuroscience, employment relations, etc. Her research has been published in a number of international and national journals of repute. Her interest in neuroscience can be traced back to her work experience at IIM Ranchi, Jharkhand, and a consulting assignment for a leading FMCG company on the attractiveness of smile study using brain activity where electroencephalogram measurements were used to understand the type of smile that is considered attractive.

**Kalpana Sahoo** is a faculty in the area of organizational behaviour at School of Human Resource Management, Xavier University, Bhubaneswar, Odisha. She has published several papers in the areas of learned optimism, positive psychology, competency mapping, employee engagement, emotional intelligence and personality in refereed journals. She has 42 research publications in national and international refereed journals to her credit and contributed 15 chapters in the edited books published by some well-known publishers. Her teaching interests are in the areas of quality of work life, emotional quotient and spiritual quotient, psychological well-being, personality and leadership.
Awareness of Employee Stress Response: How Employers Can Mitigate Workplace Burnout and Workplace Depression

Tony Deblauwe

Abstract
By examining the science behind leadership, management practices and how they relate to social cognitive neuroscience, we can understand how to target the most effective conditions for preventing workplace burnout and workplace depression. This process begins with the ability of managers to recognise and react responsively to create a culture of trust within the organisation, and identify and promote prosocial behaviours to prevent feelings of disengagement and displacement. This review discusses how one’s ability to inspire employees is particularly important, because followers with low self-concepts are drawn to a highly personalised vision. Through the promotion of the brain chemical, oxytocin, the material presents eight building blocks to promote a culture of trust, while mitigating the factors associated with workplace burnout and workplace depression.

Keywords
Employee stress management, workplace depression, performance management, organisational health, supervisor management competencies

Introduction
The workplace continues to evolve, thanks to technology and global competition. The pressure to execute and produce, often to the detriment of personal goals, health and life balance is so great that employers are feeling the impact of this pressure on the workforce. The ability to capture employees’ hearts and minds in forming a commitment to organisational priorities becomes an ongoing threat to the long-term survival of business. Particularly disturbing is the case when employees progress into a deeper state of disengagement, teetering on a fine line between workplace burnout and workplace depression. For line managers unaware of whether employees are in a state of burnout or depression, let alone, how to address these conditions before they occur, is a critical skill that cannot be overlooked.

Corresponding author:
Tony Deblauwe, Silicon Valley, CA, USA.
E-mail: tonydeblauwe1@gmail.com
The symptoms of these two workplace ailments may look similar from outside, but they actually originate from two very different psychological mindsets. First, workers who experience workplace burnout may exhibit low engagement, cynicism and exhaustion, and have poor attitude towards their job and co-workers; oftentimes, this is a result of feeling controlled or overpowered by their workplace environment. This is also known as having an external locus of control, in which they feel emotionally depleted and indifferent towards the expectations and outcomes of their work. On the other hand, workplace depression may manifest as a serious psychological hurdle, as someone’s thinking, ‘I can’t do this’, or ‘I’m a bad worker’ as a consequence of their internal locus of control. In this instance, workers are limited by their own poor perceptions of their work and abilities, which leads to feelings of depression towards their work and the relationship with others associated with work. Here, we will discuss how managers can implement strategies to maintain a thriving working environment, and how to provide conditions that may prevent the actual manifestation of workplace burnout and workplace depression.

**Employee Adaptive Displacement**

This process begins with managers who have the ability to recognise and act responsively to the prodromal symptoms of workplace depression and workplace burnout. Employee Adaptive Displacement (EAD), a term coined by Tony Deblauwe in 2012, refers to a situation in which an employee is productive and appears otherwise engaged; however, the employee may actually appear ‘displaced’ in terms of mental and physical awareness, and satisfaction related to the job and/or overall sense of career fulfilment. As part of informal research Deblauwe conducted in a variety of workplace settings, EAD awareness identified the passive yet minimally productive nature of an employee that could be addressed prior to a possible turn into burnout or depression. This early warning state could be the key in offsetting further disengagement and long-term employee retention or intervention needs but is nonetheless tied to the overall need to drive awareness to managers about employee’s behavioural response to stress.

**Trust and Leadership**

Whether a manager recognises an early state behaviour as found in EAD or is struggling to understand or help with full-blown burnout or depression, one thing is clear: the odds of lowering an employee’s reaction to pressure and stress that drives these conditions are through a manager’s actions and behaviour. It is helpful to examine the science of social cognitive neuroscience and leadership and management practices to target the most effective conditions for preventing workplace burnout and workplace depression. The majority of the literature agrees that the best leaders are not just outstanding ‘performance versus reward’ transactions, but they have a deep impact on those who follow them and the organisations that they lead. In addition, these leaders’ impact extends to realising new visions and creating real change. According to Conger and Kanungo (1998), inspirational leaders are able to relay a vision that is based on strong ideological values that cause people to become energised and identify with the vision.

A leader’s ability to inspire is considered fundamental for making a strong basis of confidence between the leader and the follower. Why do inspirational leaders have this effect on their followers? Primarily, it is through their visionary communication style. A motivational vision can be characterised by elements of altruism and social responsibility. According to House and Howell (1992), leaders who focus on serving the interests and goals of a greater community and have a vision of inclusion have a
socialised vision that will be inspirational (rather than a personal vision) that leads to processes and outcomes that benefit the followers and a larger community than the firm. A personalised vision, however, is seen as narcissistic and characterised by self-interest, an emphasis on the leader in achieving outcomes related to the organisation, and achieving dominance and authority. According to Howell and Shamir, this type of personalised vision is only inspiration to followers with low self-concepts (2005).

Research has also shown that the one ingredient that makes organisational cultures thrive and become as profitable as possible is the promotion of the brain chemical oxytocin, which allows us to determine who to trust, how generous we should be and the extent of our emotional connection to other people (Zak, 2018). By measuring oxytocin in response to various workplace situations, Zak has compiled eight building blocks to form a culture of trust, which conveniently forms the acronym, OXYTOCIN.

**O: Ovation.** Public recognition, according to Zak, should involve praising high performers in the workplace. Not only is it personal, public and facilitated by peers, it also allows the group to celebrate success, which inspires others in the group. Workers who are teetering on the brink of workplace depression may benefit from seeing tangible evidence of success in their peers, which may activate their internal locus of control to be more focused.

**X: Expectation.** According to Zak, managers should set difficult but achievable goals for their employees that result in moderate stress. The stress of a hard but achievable project releases oxytocin, which helps the employee focus and also form better social connections among others working to reach a common goal. However, this strategy only works when the challenges are attainable and clearly defined, not vague or too ambitious. Workers who may soon develop problems with workplace burnout may have experienced highly stressful work events that they feel they cannot control because they are unachievable. Therefore, setting reasonable expectations is key for this group.

**Y: Yield.** When managers allow people the ability to have autonomy at work, this promotes innovation because different people may be successful in trying various approaches to similar problems. Additionally, this promotes trust and motivation. This is a strategy that is important for those on the brink of workplace burnout because the lack of workplace autonomy has led to a low external locus of control.

**T: Transfer.** Transfer involves facilitating self-management so that employees are more in control of their workday. Employees who are allowed to pick which projects they can work on are more likely to focus their time and energy towards a self-directed goal. Again, this strategy is useful for those dealing with possible workplace burnout because it helps shift the engagement level and attitudes of the worker.

**O: Openness.** Information should freely flow from the employees to leaders and vice versa. When organisations are not open, employees tend to have a lot of uncertainty about their jobs and their futures in the organisation. Those on the brink of workplace burnout or workplace depression can develop a communicative window for speaking about their emotional concerns to leaders in the organisation.

**C: Caring.** Building nurturing work relationships with intention is important because when people develop social ties, their work performance tends to improve as well. This is because, as workers increasingly care and trust one another, they do not want to let others down. This strategy is important for repairing the internal locus of control, because if workers feel that they are being cared for by others, this may give them more confidence and trust in their own abilities, thereby decreasing the risk of workplace depression.

**I: Invest.** Managers should focus on the growth of their employees by having conversations about non-work-related topics such as their families, work-life balance and other forms of wellness.
Those at risk of experiencing workplace depression or burnout need to have open conversations about how their work affects other areas in their lives, which opens up the employee to a growth mindset as well.

**N:** **Natural.** Leaders who allow their vulnerability to show at work are seen as being authentic. Also, leaders who have a high-trust work environment tend to ask their employees for help, rather than giving orders. According to Zak, the act of helping, or being asked for help, stimulates oxytocin production, which increases help and cooperation to reach common organisational goals. This may be particularly useful for implementing in workers at risk of workplace depression, because they may identify with the emotional openness of the leader and also open up about any issues that need to be discussed to improve their own communication skills to work better with others.

Oxytocin has also been found to increase empathy, which promotes a trusting relationship. When managers build trust at work, employees are more effective on both the cognitive and emotional levels.

**Leadership Adaptation**

To channel effective leadership behaviour into ways that can increase engagement and reduce the likelihood of burnout or depression requires one to regulate his/her emotions and the ability to express a positive, optimistic outlook on the future, while minimising anxiety, sadness and fear that may demotivate followers. According to Finkelstein and Hambrick (1996), managers with a dominant left hemisphere, in which the focus is mostly rational and logical, may make good planners. Alternatively, managers with dominant right hemisphere, in which the focus is mostly imaginative, creative, visual and emotional, may make good managers and/or leaders. The particular construct known as ‘coherence’ has enabled the study of the behaviours associated with leadership. Coherence is a way of measuring how interconnected the different areas of the brain are. This is crucial to the study of a social neuroscientific concept like inspirational leadership. Having higher coherence within particular hemisphere or between the two hemispheres of the brain indicates a high degree of coordinated brain activity. For example, higher coherence in the right hemisphere can indicate a higher emotional balance.

Emotional intelligence has a basis in brain circuitry and is associated with how cortical regions of the brain interpret and manage neurotransmitter signals (Morse, 2006), and can be used by leaders to formulate a leader’s vision. People with enhanced right frontal coherence may be able to both conceptualise the concerns of multiple groups to form a cohesive vision and deal with emotional strains, moral issues and uncertainties. They may be able to recognise the positive emotions of others that can be enhanced through visions that are socially inclusive.

As such, organisations that hire and train managers and leaders with high emotional intelligence are more likely to see fewer employees disengaged as a result of burnout or depression, because these leaders and managers are already adapted to dealing with strategies that can prevent workplace burnout and workplace depression. According to Zak, openness of information flow between the manager and employee is needed to reduce tension and uncertainty associated with their employment. When uncertainty is mitigated, the external and internal locus of control can remain more in balance with the requirements and needs of the organisation. Additionally, those with open information channels allow for a communicative window that can facilitate the implementation of trust-building strategies to combat workplace burnout and workplace depression. In practice, organisations cannot remove all the conditions that impact employee’s mental health and resulting disengagement or behavioural response, but
employers can help management to develop techniques to foster resiliency and connectedness in their employees to arm them with the confidence and personal empowerment to make them the best professionals they can be.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

References


Author’s Bio-sketch

Tony Deblauwe is a Silicon Valley-based Human Resources Leader, who has extensive experience in helping companies design and implement strategic people initiatives. He is the author of the best-selling and award-winning book, Tangling with Tyrants: Managing the Power at Work, and the twitter-style book, #Managing Up: 140 Tips to Building an Effective Relationship with Your Boss. Tony has been quoted in several media publications including The Ladders, HuffPost, Psychology Today and CBS News. Tony received his master’s degree in human resources and organisation development from the University of San Francisco and is a certified executive coach.
Happy Hormones at Work: Applying the Learnings from Neuroscience to Improve and Sustain Workplace Happiness

Sambit Kumar Ghosh¹,²

Abstract
Workplace happiness is one of the most valued and pursued goals of an organisation. Researchers, scholars and practitioners have acknowledged the benefits that a happy workforce brings to the table and its enormous contributions to business outcomes. Researches in neuroscience help us in gaining more knowledge about the molecular structures of the brain, nervous system and the resultant behaviours. Learning from neuroscience teaches us that happiness is a state of mind and is a result of the complex interplay of hormones and neurotransmitters, and that the release of neurochemicals and neurotransmitters has a role to play in making us happy. There are ways and strategies to trigger these neurotransmitters and boost their levels of secretion, thereby intentionally and naturally causing them to flow and maximise happiness. This article attempts to list various activities and programmes that can be practised at the worksites to achieve, sustain and maximise happiness at the workplace.

Keywords
Happiness at work, neuroscience and happiness, neuroscience and workplace happiness, happy hormones at work

Introduction
We all want to be happy. Joy and happiness are fundamental human emotions, and are pursued as a valued goal across different societal frameworks. Happiness ranks high in our personal and professional checklists of wishes and wants. In our pursuit of happiness, we constantly look out for factors that make us happy. We make various efforts and invest time in searching for happiness. But where does happiness reside? Neuroscience possibly has an answer to this. Studies in affective neuroscience (the study of neural mechanisms of emotion) and organisational neuroscience (the study of the benefits in the understanding of the complex human brain for application and managerial practice) provide several new

¹ Head-People Development and Engagement, Essel Finance Management LLP.
² Doctoral Research Scholar, FPM(I), IIM Indore, Indore, India.

Corresponding author:
Sambit Kumar Ghosh, Flat no. 302, Abhiruchi CHS, Plot no. 6, Sector 12, Vashi, Navi Mumbai 400703, India.
E-mail: sambitkumarg@yahoo.com
insights into the causal linkages between the brain and behaviour, and reflect on the immense potential that our brain may have to shape and drive our own happiness. The world of neuroscience has explored several ways to provide new insights into organisational scientists and practitioners in solving many of their work-related issues and offering solutions which can be practised at the workplace. Workplace happiness and well-being have occupied adequate attention in this space and have been the subject of several discussions. Neuroscientific studies through the use of neuroimaging techniques, brain data and physiological measures have thrown light on the neural correlates of happiness. The neural knowledge of the alteration of neurocircuitries, the release of neurotransmitters and the non-pharmacological methods of arousal and release of the brain chemicals has contributed to the scientific understanding about happiness and well-being (Dolcos, Moore, & Katsumi, 2018; Fox, Kaplan, Damasio, & Damasio, 2015; Suardi, Sotgiu, Costa, Cauda, & Rusconi, 2016; Young, 2007). The present article is an attempt to discuss 13 breakthrough insights into neuroscience which can be readily used to improve happiness at the workplace. Through deliberate attention and practice of certain activities, the neural pathways get stimulated which in the world of neurosciences is referred to as Hebbian theory, which states, ‘Neurons that fire together wire together’, thus forming new neural connections (Burton, 2016). The more number of times the new neural connection is travelled, the easier it makes to stimulate the pathway and this results in forming new habits. The formation of new habits at the individual and collective levels along with continuous practice is what makes us unique and formidable as units, helps to transform ourselves individually and collectively, and navigate the complex arena of work, and generates desired outcomes of happiness, productivity and business success.

The researcher and author Sonja Lyubomirsky in her book, The How of Happiness captures happiness as ‘the experience of joy, contentment, or positive well-being, combined with a sense that one’s life is good, meaningful, and worthwhile. ’ Work occupies an important space in an individual’s life. People work for economic needs and also for psychological fulfilment. Thus, being happy is of great importance at the workplace too. It is widely known both from research and practice that a happy workplace contributes to several business outcomes. In the Harvard Business Review article, ‘Positive Intelligence’ (Jan—Feb 2012), the author Shawn Achor reflects that every business outcome reports improvement when the brain is positive (Achor, 2012). He goes on to argue that happiness is a pre-cursor to success.

Workplace happiness is crucial for enhancing productivity in an organisation, and maintaining happiness at the workplace can also increase employees’ productivity. A study conducted by the researchers Andrew J. Oswald, Eugenio Proto and Daniel Sgroi from the University of Warwick, Coventry, UK reports that people who are happy at work are about 12 per cent more productive (Oswald, Proto, & Sgroi, 2015). Happy employees are more loyal, generates positivity, fosters positives relations, increases camaraderie, and contributes in improving customer services (Seppala & Cameron, 2015). Neuroscientific research has revealed that happy employees are better workers, and they work both harder and smarter. Companies who aim to create an engaged workforce do so by valuing happiness (Mckee, 2014).

Antonio Damasio, one of the world’s leading neuroscientist reflected, ‘We are not thinking machines that feel, but emotional machines that think’. Feelings and emotions do matter at work, and this is being increasingly proved by advances in neuroscience; there are clear neurological links between feelings, thoughts and actions. Neuroscience helps in educating us through scientific explanations, the underlying factors that generate happiness—the hormones and neurotransmitters which are at work and responsibly functioning at the background to make us feel happy, trusted and motivated. Our feelings and emotions are a result of chemical reactions taking place in the brain. Happiness is a state of mind, and studies in neuroscience inform us that the feeling of happiness is related to the complex interplay of chemicals in
the brain—that the release of certain chemicals in the brain called neurotransmitters which are responsible for the transmission of messages from one neuron to another across a synapse. These reactions are responsible for making us experience both negative emotions (anger and sadness) and positive emotions (love, happiness, joy, etc.). The brain releases the so-called happiness hormones—dopamine, oxytocin, serotonin and endorphin—which affect our happiness (Bergland, 2012).

**Dopamine:** Dopamine is a hormone and neurotransmitter which is related to the brain’s reward and pleasure centres. It is linked to motivation, memory, attention and focus, and it gets released when one strives towards a goal. It initiates actions in us and motivates us to work hard to achieve the satisfaction of reaching the goal. The good news is that dopamine can be increased, and one can effectively improve the motivation, focus and mood by taking natural steps in order to increase the dopamine level in his/her brain (Asociación RUVID, 2013; Baixauli, 2017).

**Oxytocin:** Oxytocin is a hormone and a neurotransmitter secreted by the hypothalamus of the brain. It is released when people bond socially, thus influencing social behavior. It is the chemical behind human trust, empathy and relationship building. Neuroscientist Paul J. Zak’s talk at TED Global 2011, ‘Trust, morality -- and oxytocin?’, focused on the benefits of the hormone oxytocin, which he called the ‘moral molecule’ because of its strong linkages to trust, empathy and prosperity. Oxytocin deficiency makes it hard to feel affection, makes one depressed, anxious or fearful, angry, aggressive, and also makes it difficult to enjoy social interactions (Zak, 2013).

**Serotonin:** Serotonin, another important neurotransmitter, plays a major role in regulating our mood. It is produced in the intestines (guts) and the brain. Individuals with high levels of serotonin are peaceful and calm by nature, open and clear-minded, and are socially dominant. Deficiency in serotonin makes people anxious, depressed and aggressive, lowers self-esteem and results in low mood. It is the precursor to melatonin, the neurotransmitter that allows us to sleep (McIntosh, 2018; Watanabe & Yamamoto, 2015).

**Endorphin:** Endorphins are neurotransmitters which lead to decreased feelings of pain. They are released during exercise to cope with the pain of physical exercise. They also trigger a positive feeling which leads to euphoria (intense happiness). The euphoric feeling that follows an exercise, often described as ‘runner’s high’, is a positive one which is triggered by endorphin. Exercising, thus, becomes enjoyable; endorphins make oneself happy. Endorphins help to alleviate anxiety and depression as they are released in response to a pain. They can make one feel wonderful. There are natural ways to boost the endorphin levels, thus making oneself feel happier (Stoppler, 2018).

Knowledge of everyday events that may trigger any of these neurotransmitters and boost natural flow of specific neurotransmitters are contributions from the researches in neuroscience. We do engage in all of these activities at some point of time with no or little knowledge of what effect these activities have on our brain. Numerous neuroscientific researches have provided scientific validation to the following activities in order to boost positive culture in an organisation.

1. **Break the bigger goals into smaller tasks and prepare the checklist of smaller tasks**
   Research suggests that dopamine levels are increased when we finish a task or reach a goal. These could be a bigger goal that we are striving for or even the smaller tasks at hand. This is primarily because the brain releases dopamine as soon as we acknowledge that any task at hand is completed.

   This dopamine release generates a good feeling in us and also moves us to complete the remaining tasks (if any) with the continued experience of the pleasant feeling. Thus, it would be
a good strategy to structure our day at work to give us such small hits of dopamine (Hamid et al., 2016). The happy feeling of target achievement generated through this dopamine release helps develop a sense of repetition of the same actions that resulted in the initial success. This is referred to as ‘self-directed learning’ by the neuroscientists (Marchese, 2016). This is precisely why achieving smaller goals is an effective way to continue to stay motivated in course of reaching long-term goals and projects. Thus, to have more dopamine hits, the big jobs and goals can be broken down into smaller tasks. Research also suggest that our brain feels satisfied when some items are checked off from the to-do list and releases dopamine that in turn motivates us to repeat the actions that would lead to checking off more items. Marking of completed tasks provides us with a feeling of satisfaction in our brain (Marchese, 2016). This activity of checking the to-do list off after finishing the tasks brings in a sense of accomplishment, can help to increase the dopamine levels, thereby generating happiness. I have witnessed that this works wonders and raises the confidence of the employee, and results in a feeling of sense of achievement and generates lots of happiness.

2. **Looking for new things, engaging in creativity**

Research also suggests that Dopamine production is triggered when an individual finds something new and exciting in front of them. This increase of dopamine levels can be achieved by practising simple creative hobbies that need an individual to focus like photography, crafting, drawing, etc. (Chermahini & Hommel, 2012, Article 319). Thus, at the organisation level, we can create opportunities for employees by assigning them with a new project, creating task forces to build new product lines, encouraging them to participate in research works, etc. We can also organise fun activities around the several festival times which may include photography contests, creative workshops, activities that calls for creativity, slogan competitions around certain themes, involving the employees and their kids and families in crafting and drawing competitions during annual day celebrations or any other national event celebrations.

3. **Cultivate positive thoughts to increase serotonin: Stay positive, remember happy events, practise optimism and recite affirmations**

Researchers from the University of Montreal, Quebec, have suggested that our thoughts affect our serotonin levels. In an experiment, the researchers used positron emission topography to measure serotonin levels in participants going through positive, negative and neutral mood inductions, and it was found that serotonin production was higher when the participants reported higher mood levels and its production was lower when the participants reported lower mood levels (Perreau-Linck et al., 2007; Young, 2007).

Staying positive is the key to better performance, overall health and well-being. Optimism is associated with the structure and functioning of the brain (Dolcos et al., 2018). It helps to raise serotonin levels. It has been found that remembering positive and happy events increases serotonin production in the brain, thereby diverting an individual from negative thinking (Korb, 2011; Suardi et al., 2016). At the workplace, there can be a visual display of photographs that carry happy memories of past achievements, get-togethers, picnics, off-sites, office celebrations at important places in the offices such as receptions, meeting rooms, cafeteria, general work areas and also digitally through wallpapers. Organisations can also customise and prepare calendars with such photographs and gift them to employees during the New Year.

Some of us may also have experienced that affirmations really do work. Affirmations are positive short, self-believable statements of a future and desired outcome. Research suggests that affirmations are able to help increase the production levels of endorphin which can instantly
improve the mood, and repeatedly reciting affirmations helps change and create neural pathways for positive thinking (Sherman, 2013).

4. **Get social: Make time for social interactions, increase social dominance**

It is important to create more social interactions at the workplace. Social connectivity triggers the release of oxytocin. Our role in social circles may also influence the serotonin levels. Research suggests that social dominance increases more serotonin, and tryptophan, a precursor to the neurotransmitter serotonin, enhances dominant behaviours (Watanabe & Yamamoto, 2015). In another study, it was found that an increase in serotonin and tryptophan decreases aggressive or quarrelsome behaviours and significantly increases affiliative and socially dominant behaviours (Moskowitz, Pinard, Zuroff, Annable, & Young, 2003; Young, 2007). Organisations can create multiple social groups with definite purposes, such as taskforce committees, engagement committees, sports committees, mentor–mentee teams, and provide opportunities to individuals to take active participation in these groups and increase their social dominance.

5. **Create opportunities to celebrate at work**

As human beings and more so as professionals, we all strive to and love to win. Celebrating a win releases a flow of dopamine into our system (Wildermuth, 2018). Judith E. Glaser, the author of *Conversational Intelligence*, posts on Psychology Today, ‘Celebration conversations elevate the level of such “feel good” chemicals as oxytocin and the endorphins’. At the workplace, it is therefore important that we create opportunities to celebrate small winnings, do a victory celebration, cut a cake, send a congratulatory email, click pictures of winning celebrations and stick them around the work area. Through these practices, I have observed that these actions generate a feeling of accomplishment, create a sense of fulfilment, bring positive energy on the floor and motivate the individual to get up and go for the next achievement. Thus, from a scientific standpoint, these gets the happy hormones rush on every next achievement.

6. **Handshake and hugs**

Dr Paul J. Zak, a pioneer in the field of oxytocin research, recommends connecting and talking with friends or colleagues, making eye contacts, a pat on the shoulder and even shaking hands to boost the levels of oxytocin; he even recommends eight hugs a day. Thus, when connecting with friends and colleagues at work, it is important to maintain eye contact while speaking and firmly shaking hands while greeting. Back at home, cuddling a pet also generates a higher level of oxytocin. These activities generate trust, and trust is the highest form of motivation which makes an individual happy (Zak, 2013).

7. **Gifting at work and practising charity**

Employees are the backbone of any organisation. Organisations need to take care of the employees in the best possible ways. Dr Paul J. Zak’s human oxytocin studies showed that receiving gifts raised oxytocin (Zak, 2013). Those who engage in acts of giving reach-a-state of euphoria which psychologists term as ‘helper’s high’ and emphasises that giving produces more endorphins in the brain (Baraz & Alexander, 2010). Organisations can promote a culture and make a regular practice of gifting through various ways—through fun events, gifting on birthdays, on employees’ marriages, marriage anniversaries, attaining parenthoods, on special and personal achievements, festival gifts, initiating tenure awards, or by participating in charity work, encouraging employees to volunteer for activities that support a social cause, donate items to orphanages, old-age homes by actively participating directly or through NGOs. Through fun activities, employees can also be encouraged to gift each other. During Christmas celebrations, while organising fun events like ‘Secret Santa’, where employees were encouraged to gift each other by drawing chits to become
‘Secret Santa’ to another employee and presenting a surprise gift, I noticed increased enthusiasm and participation. Those missing the event ensured that they also reciprocate the act when they joined back. This generates lots of positivity in the environment. Through the contagious effect that they have, these activities generate camaraderie amongst team members and increase happiness at work. While engaging in works of charity, I have witnessed the altruistic behaviour and the whole-hearted participation amongst the employees who felt satisfied and happy because of the opportunity that the organisation provided them to contribute towards a social cause, thus generating a sense of fulfilment and happiness from within.

8. **Laugh: Humour at work**

We have often heard that laughter is the best medicine; Norman Cousins have even referred to it as ‘inner jogging’. Science has helped us to learn that the process of laughter boosts the immune system, reduces blood pressure and drops the stress hormones. Neuroscience informs us that laughter increases happiness by producing higher levels of endorphin. The brain gets into an action just after hearing the first few words when a joke is cracked, and at the climax, when the punch line is revealed, the heart rate rises, the listener jiggles with amusement, and the brain releases dopamine, serotonin and endorphin (The Harvard Mahoney Neuroscience Institute Letter, 2010). Organisations should, therefore, encourage humour at work. At the workplace, I organise several fun events which include inviting an artist to draw cartoon faces of employees and gifting it to the employees, placing a ‘humour board’ at the cafeteria or in an area frequented more by the employees. Intellectual and decent jokes (after scrutiny) put up in the humour board everyday create joy, happiness and excitement amongst employees. Organisations can also organise ‘joke competition’ or laughter events amongst employees, set up laughter clubs activities and therapies on Friday evenings or can include a section on humour in the monthly newsletters.

9. **Cultivate a culture to develop an attitude of gratitude across the organisation**

There is a considerable attention from both researchers and practitioners on the wellness benefits of gratitude, and scholarly works of researchers continue to enlighten us on the correlates of gratitude and neuroscience and the associated impact on organisational wellness (Burton, 2016; Fletcher, 2015; Fox et al., 2015). The world of neuroscience informs us that the expression of gratitude releases dopamine that makes us feel good. It was also found that when we reflect on or write down the positive situations or experiences that we encounter in our life, the brain releases serotonin and, as serotonin enhances our mood, we start feeling happy (Burton, 2016). Robert A. Emmons, through his researches in the area of gratitude, found that people who consistently practise gratitude enjoy a host of physical, psychological and social benefits (Emmons, 2010a). Eric Mosley and Derek Irvine in their book, *The Power of Thanks* recognise that expressing gratitude and appreciation plays a role in enhancing productivity. It is, thus, evident that practising and dispensing gratitude at work has far-reaching positive consequences, both for the organisation and employees. Organisations can, therefore, help cultivate and propagate a culture of gratitude and appreciation at work. Robert A. Emmons recommends spending time with oneself, lingering on to positive thoughts and creating a gratitude journal, enlisting the things one have to be thankful for each day. If regularly practised, it helps in developing grateful thinking (Emmons, 2010b). At the organisational level, gratitude needs to be driven as a core value and the culture of gratitude needs to be developed. The values of gratitude need to be institutionalised and campaigned across the organisation. This is contagious in nature and will spread fast. To promote such a culture, I organised activities like ‘Appreciation week’ where we encourage employees to
record and send their appreciation statements to fellow colleagues for the help and support they would have received from them. Awards for most appreciated employees, and appreciators were institutionalised to recognise the desired behaviour, increase participation and fun amongst the employees for such events.

10. Get adequate exposure to bright light and sunlight

Bright light and sunlight exposure help synthesise Vitamin D in the body and boost production of serotonin levels. Studies have also shown that sunlight exposures can increase the levels of dopamine (Young, 2007). However, it is also important to adhere to safety guidelines of sunlight exposure, as too much sunlight exposure can be harmful; thus, moderation is the key. Research recommends to limit sunlight exposure during peak hours when ultraviolet radiation is the strongest, typically between 10 am and 2 pm (Hansen et al., 2016). Thus, guided by these research works, organisations can also plan activities like outbound training programmes, events, sports days and so on to provide employees an exposure to the sunlight. The programmes can be either planned before 10 am and after 2 pm to limit the sun exposure and prevent them from any hazardous effects. It would also be a good idea to have lunch or tea/snacks in a place where there is exposure to sunlight. In fact, workplaces and corporate cafeterias can be created accordingly to have adequate exposure to bright lights and sun lights.

11. Exercise and meditation at workplace

Regular habits of exercise, meditation or activities that help to build concentration are the building blocks of physical and mental well-being. Studies have shown that exercise increases multiple neurotransmitters—serotonin, endorphin and besides—and dopamine also gets a boost and these causes a fast improvement in our moods. Exercising not only relieves stress, it also helps in achieving better physical health and makes an individual more productive. The possible neurobiological mechanisms behind the positive effects of exercise result in neurogenesis and neuroplasticity (Dolcos et al., 2018; Semeco, 2017; Young, 2007). At the workplace, organisations can arrange for a gym in their own premises (or tie up with a nearby gym) where employees can exercise before or after the day’s work, organise sessions on aerobic exercises, organise weekly yoga sessions, train yoga techniques to practice at the work desk within work intervals, etc. Even taking a stroll and avoiding a lift and climbing some stairs can help release these hormones and make oneself happy.

Meditation is the practice of concentrating, focusing inward and letting our thoughts float. Research suggests that meditation helps in increased levels of dopamine and regular practice is associated with improved mental and physical health (Kjaer et al., 2002; Williams, 2013). Organisations can help employees learn meditation through experienced trainers who can teach them the right techniques to concentrate and meditate in between work intervals, organise meditation and similar sessions, create a place for employees to meditate before the start of work, etc.

12. Aromatherapy at the work desk

Smell of vanilla and lavender has been linked with the production of endorphins. Smell of Lavender is associated with decreased anxiety and improved mood (Butje, Repede, & Shattell, 2008). Thus, organisations can plan to keep some scented oils at the employee’s work—desk, reception, boardrooms, meeting rooms and so on for a quick endorphin release and decrease of anxiety and improvement in mood.

13. Music: Listen to favourite music, anticipate music and make music

Music has a universal appeal in conditioning human minds. It influences our moods and emotions. When we listening to our favourite tune and enjoy the music that we like, our brain releases
dopamine as a response (Salimpoor, Benovoy, Larcher, Dagher, & Zatorre, 2011). At the workplace, organisations can play soft and soothing music during lunch hours or at the cafeteria, reception areas, organise weekly piano or any other instrumental music classes after office hours, organise employee talent hunt competitions, etc.

**Conclusion**

To conclude, the above-mentioned 13 everyday practices are not very difficult and demanding changes in our daily chores and can be easily adopted at the workplace. We are free to choose what we want to see, eat, hear, touch, and desire to think, feel and act. Happiness is also a choice that we can make, a gift that we can present ourselves through modulating our attention, goals and action. The neural knowledge provides us with a scientific validation of what we do and how we can consciously create and cultivate a culture of happiness in the organisation, thus creating a happy workforce and rendering countless benefits and limitless possibilities of growth, harmony and well-being.

**Note**

1. This article companion piece to the ‘Discovering the Health and Wellness Benefits of Gratitude’ entry in the October 2016 issue of the Wharton Healthcare Quarterly.

**References**


**Author’s Bio-sketch**

_Sambit Kumar Ghosh_ is a versatile strategic HR practitioner and has been contributing in creating performance-driven, target-oriented cultures, piloting competency-driven strategic HR interventions, engaging employees proactively and building learning organisations across various industries such as construction, retail banking, stock broking, telecommunications and financial services. He is an accomplished HR and L&D professional, and has been working in various senior HR leadership positions with reputed brands spanning across various industries. He is pursuing his doctoral research programme (FPM Industry) from IIM Indore. His research interest lies in the areas of emotions and leadership decision making, emotional labour, happiness and engagement at workplaces, applications of neuroscience in management and power and politics in organisations.
For many of us, neuroscience is a super speciality science, closely associated with medicine and health. Can we get benefit in our daily chores at work from neuroscientific insights? To answer this question, you need to go through one of the bestsellers in the area of neuroscience and management, Your Brain at Work, written by Professor David Rock, the founder director of globally acclaimed NeuroLeadership Institute. Professor Rock has written many famous books on leadership, for example, Quiet Leadership, Handbook of NeuroLeadership and Coaching with the Brain in Mind. He is a renowned global leader in bringing neuroscience and human resource practices on a common platform to reform science of human resources (HR). The book successfully connects theoretical neuroscientific insights to everyday work/business-related issues.

Your Brain at Work is an excellent read for a beginner in neuroscience who wants to learn why and how we can apply neuroscientific insights in our everyday life. The emphasis of the book is on ‘effective adaptation’ with both personal and workplace environments. With the help of theatre and drama, Rock portrayed daily life scenes to bring out the solutions to everyday problems at the workplace. The everyday life issues narrated in the form of various acts are naive and real. The book gives you a true flavour of science blended well with fiction. The protagonists ‘Emily’ and ‘Paul’, being in the role of the newly appointed vice-president of marketing and IT consultant, respectively, are shelled with never-ending work-related issues such as loads of emails, chasing deadlines, project meetings so on and so forth. The author resolved these issues through imparting knowledge of how brain works at work when we face these problems.

The reader feels connected, and facts build over such base carry practical knowledge. For example, in ‘Take 1’ of the first scene, he discussed ‘morning email overwhelm’ problem. All of us can very well identify with Emily’s anxiety to deal with taxing morning mails at work. The author discussed this issue and described how neuroscientific insights can be used to resolve this anxiety. In ‘Take 2’, he showed how Emily dealt with the same problem by using neuroscientific insights in an effective way.

The book is comprised of four such acts. Act 1 is about ‘problems and decisions’, act 2 is about ‘stay cool under pressure’, act 3 talks about ‘collaborate with others’ and the last act is about ‘facilitate change’. All these acts include various everyday scenes around which neurological underpinnings and their behavioural outcomes have been beautifully woven. Thus, the book needs an open and flexible mindset to understand the underlying neurological concepts and their use in everyday life.

The theoretical foundation of these issues and explanation of the brain areas associated with specific behavioural responses show the brilliance of the author’s imagination and hard work he had put behind
such integration of stories with core research and theories. It is a very creative way of writing and helps readers to connect oneself with the idea. It feels like one is attending a lecture, and acts are so created that it looks like a drama is going on the stage.

The book provides you with plenty of ideas and behavioural practices for improving effectiveness. Some of these ideas are not revolutionary, and you may not only have heard about it but may also have used it to resolve your problems, for example, the idea to ‘prioritize prioritizing’. The leadership literature has volumes of researches on prioritising. Adding to this existing literature, the book tried to build on neurological foundations of why prioritising is so important at work. In this way, it adds on theoretical and scientific underpinnings to HR practices.

One of my favourite takeaways from the book is the idea that working harder and putting a lot of energy on a problem is not always a good option. Resourceful thinking lasts for a limited period of time. As explained in the book, we have limited resources for a given task like decision-making. We need to organise these limited resources to get best out of it. The author also talks about how one should use the brain to interact with information, for example, storing information by creating visuals.

Concepts such as attention, memory and distractors of attention have been discussed in detail in the backdrops of scenes. The importance of attention in mental processes and role of basal ganglia in strong routine habits have been discussed, and the author suggests that one should learn executing fixed routine tasks if he/she desires to excel at multitasking. While talking about distractors, the author has described the role of the anterior cingulate cortex (error-detection circuit) which detects novelty, and if it fires too often, it brings a state of anxiety and fear. On the other hand, the author describes the ventrolateral prefrontal cortex as a break system of brain which helps us to remain focused by inhibiting many unwanted responses. The author has also highlighted the impact of insights and emotions in performance. The role of the right hemisphere for insight and that of the limbic system for emotion have been extensively discussed.

The book talks about personal abilities as well as emphasises the importance of social connections and healthy collaboration. It would be unfair if we do not talk about the key contribution of this book, that is, the SCARF model. SCARF refers to ‘Status’, ‘Certainty’, ‘Autonomy’, ‘Relatedness’ and ‘Fairness’. Status is about relative importance, pecking order, certainty is the ability to predict future, autonomy means a perception of existing control over one’s environment. Relatedness is defined as the sense of safety with others and fairness is the perception of fair exchange. These are five domains of social experience. SCARF represents a pragmatic model to enhance collaboration with others and facilitate change. The author insists that changing behaviour is a difficult task. These five domains activate either the ‘primary reward’ or the ‘primary threat’ circuit of the brain. This model is built on the central idea of previous researches that the brain treats many social threats and rewards with the same intensity as physical threats and rewards. The author has used numerous metaphors to discuss the practical use of knowledge related to these domains. The author has been really creative and witty in doing so. SCRAF profiling can be assessed and worked out at both individual and organisational levels. People and organisations do vary on all these five domains; therefore, a meticulous and precise SCARF profiling not only alarms ineffective practices but can also work as a remedy to change ineffective HR practices.

Thus, the book is an excellent read and serves the purpose to graduate the reader to understand how our brain works at work.

Gyanendra Pandey
District Social Welfare Department
Uttar Pradesh, India
E-mail: gyanendraprasadpandey@gmail.com

Going through the first few pages of my internship diary, I found this:

Everybody seems to be too occupied in their tiny, terrible office cubicles that they barely have any time to look after themselves, their colleagues or the organisation. In spite of knowing this; I cannot stop one-half of my head from feeling, ‘Nobody here value my contributions’ and the other half from constantly worrying for being asked too much too often. I see my inspirations and imaginations of workplace and career in large are crumbling; I hope to endure through this.

Somewhere down the long years of your work experience, you might have walked through these same dark lanes several times and yet managed to find your way out. But sadly, we have lost a lot of capable people in such dark lanes. Gianpiero Petriglieri in his *Harvard Business Review* article, ‘There Is No Shortage of Leaders’, laments the shrinking of collective imagination, a crisis of purpose for leadership (Petriglieri, 2015) and the void in which we have lost our leaders.

To make up for these losses and to develop organisational capabilities, companies across the globe increasingly consider spending for leadership development as their top priority (Wakefield, Abbatello, Agarwal, Pastakia, & van Berkel, 2016). US companies are seen spending $14–$50 billions on leadership programmes annually (Pfeffer, 2014). Yet, as Barbara Kellerman (the author of *The End of Leadership*) of Harvard University and Jeffrey Pfeffer (the author of *Leadership BS*) of Stanford University have written:

> The leadership world continues to be dominated by stories, myths, and fads, often promoting superficial solutions that appear effective but … do not deliver measurable impact and results.

The authors suggest a *systems approach* way for companies to get more from their leadership (organisation)-development efforts:

> But is it possible for organisations to adopt a robust systems approach that can encapsulate all possibilities, as organizations face and evolve in the VUCA world?

*Organisational neuroscience*, a systems approach to understanding human experiences in organisations, may hold the key to objectively understand complex realities because neuroscience identifies common neural processes across behaviours.

The Nobel laureate Santiago Ramón y Cajal penned down his experience when he first discovered the anatomy of a neuron (Rooney, 2017):

> I expressed the surprise which I experienced upon seeing with my own eyes the wonderful revelatory powers of the chrome-silver reaction...

Carrying the same excitement and hope for neuroscience, the book, *Neuroscience for Leadership*, is the result of enthusiasm and diverse expertise shared among Tara Swart, CEO, The Unlimited Mind, UK
(medicine and neuroscience), Kitty Chisholm, Director, Boardwalk Leadership, UK (leadership and organisational learning) and Paul Brown, Senior Advisor, Vietnam Veterans of America Foundation, Vietnam and Faculty Professor in Organisational Neuroscience, Monarch Business School, Switzerland (clinical and organisational psychology). They have reviewed hundreds of scientific papers and books from fields such as organisational psychology, medicine, leadership and neuroscience. This book is an open effort to what Green and Cohen argue (Green & Cohen, 2004):

Neuroscience would not discover crucial facts or clever arguments, but form a new appreciation of old arguments, bolstered by vivid new illustrations.

This book is largely organised by two themes: sustainable personal development and neuroscience of leadership. By intertwining these themes, the authors recognise the inseparability of both personal and organisational selves. Across all chapters, the authors draw compelling stories from medicine, neuroplasticity, flow (here, a state of optimal experience), behavioural studies, etc., which break the ingrained duality of our personal and organisational selves. These stories leave us with no escape but to bite the silver bullet also known as our morning walk, spending time with our dear ones, quitting bad habits, 10 minutes of mindfulness exercise, etc.

One can take help in assessing their mental health with a scale what the authors call as Brain Olympics. To earn a bronze medal, shape your self-care routines to support resilience. Get enough sleep—six to eight hours a night—limit caffeine late in the day, and avoid smoking and drinking. Put down your digital media an hour before bed: the light affects your pineal gland and the data stimulate your brain. To earn a silver medal, give yourself more energy: eat nutritiously, drink lots of water, breathe deeply and exercise a half-hour daily, hard enough to elevate your heart rate. To earn a gold medal, shape a life that supports your ‘higher purpose’. Through scales such as Brain Olympics, the authors adopt a mind body ‘continuum’, where the mind at work is influenced by the state of body and otherwise.

Moving on to the grey matter of our content, neuroscience of leadership, the authors comment on neuro-scientific underpinnings of diverse leadership facets starting from agility to storytelling by presenting fascinating frameworks, facts, stories and experiments. As we read this book, we can know how and why it is easy to accept fairness and equality as an integral value but not diversity; how mirror neurons help us in imitating others’ actions and derive other person’s intent as well; why fighting our emotions might be a bad choice even in the workplace; and why caring for people often takes the form of concern for the quality of stories, not for their feelings. This book makes an attempt to democratise leadership dialogue by placing neuroscience at the heart of leadership. By doing so, the collective leadership dialogue shall no longer be constrained within the walls of boardrooms but across the organisation and society in large. Organisational neuroscience, gives no room for ifs and buts when it comes to understanding the reality, that is, human brains. Thus, this book gives us the hope that adopting a neuroscience perspective in organisations will help us resurrect more humane work cultures.

Unfortunately, it is not clear from the book how we should boil down these excessively academic/scientific experiments, examples or cases into a prescription for change. But being a young discipline, it is in the hands of organisational behaviour (OB) scholars who have the potential to push neuroscience in profitable new directions. Along with our long-established tools of enquiry, OB scholars should immerse themselves in the dialogue of neuroscience, drawing on consistent findings within this growing body of research. This new perspective will deepen our understanding of organisational research problems, as well as underlying brain systems and cognition (Becker & Cropanzano, 2010).
The book, *Neuroscience for Leadership*, is a lucid and an inspiring read. This book does not differentiate between the one who knows about the brain and the one who does not. Covering topics from emotional intelligence to ethics and brain–body continuum to creating sustainable behaviour change, this book is for everyone and anyone looking for a new appreciation of what they have been doing and what they can do. One might feel lost during this travel (read) in the road less taken (a neuroscience approach to management). But you shall discover that leadership has nothing to do with the organisation; rather, it is more about how we are with ourselves and with the people around us; it will ultimately humanise the way we approach leadership and thus instil confidence that leadership is necessary and possible for everyone!

*I am the master of my fate; I am the captain of my soul.*

—William Ernest Henley

**References**


Gautham Ananda Kumar

Indian Institute of Management, Indore

E-mail: i14gauthama@iimir.ac.in


DOI: 10.1177/2631454118802495

*Engaged* is an epitome of how knowledge of the brain can be used at your workplace. The book *Engaged* fills the gap between neuroscience and business. This book provides solutions for general workplace problems such as inability to achieve goals, sleep deprivation, lack of motivation and potential barriers to effectiveness. The book explains the pertinent content of neuroscience to the layman. This book cited various scientific studies of neuroscience, cognitive science and management research. The language
of the book is simple, effective, comprehensive and eloquent. The chapters follow a rational account of neuroscientific insights. The contents of the book are both inclusive and actionable. At the end of each chapter, the author summarises key points in terms of bottom-line insights, actionable plan for today, long-term plans and overall ideal vision as a take-home message. Such bullet point explanations and action plans make the content ready for practice.

Amy Brann, the author of the book is the director of a consultancy firm named Synaptic Potential, and an executive coach and neuroscience expert. She has a medicine degree from University College London and is a practising consultant helping other organisations to work towards creating happy people. ‘Synaptic Potential’ educates people about neuroscience and its application in the organisational settings, including organisational design, development, resourcing and talent planning, learning and development, people management and organisational productivity.

The author emphasised the fact that when we love our work, we actually enjoy the route to achieve our goals. An effective allocation of attention and using attention as a commodity help to achieve results in an organisation. The author claims that neuroscience is fundamental not only for managing employees but also for the organisational effectiveness as a whole.

The book is divided into four parts: the foundations, how do we engage people, how do we motivate people and how do we manage people. The first part explains how people work and how an organisation can shape its environment to make people work for the desired outcomes. The author suggests that any organisation must set ‘clear results’ that they cannot compromise for. The organisation shapes our behaviour, and the identification and communication of clear results are important for achieving effective outcomes. Through examples, the author has shown how the external environment can affect the productivity. Many renowned MNCs create a unique external environment for their employees to engage them; some companies have colourful and storytelling interiors, indoor tree houses, a pirate ship-like office, pinball machines, pool tables, massage areas and meditation rooms, and beach huts. The author concludes, based on various studies, that we get influenced by the internal and external environments through activating various neurotransmitters that result in changed behaviour.

The book highlights one of the crucial issues most of the employees face, that is, sleep deprivation and its effects on their performance. Referring to some neuroscientific studies, she explained the benefits of sleep. Adequate sleep improves cognitive skills, reactivation and restructuring of memory, as well as intuitive behaviour. To overcome the problems associated with sleep deprivation in employees, many organisations have reduced long working hours, provide free caffeine, workplace napping facilities and organise awareness training workshops on sleep. The book also advocates organised sleeping hours, and maintaining a habit of the fixed sleeping schedule and a healthy daily routine. The book also talks about the modern antidote of sleep which helps in overcoming sleep-deprivation problems. She explained how intake of caffeine delays the negative effects of sleep deprivation. When we take a cup of coffee, it works as an antagonist of the adenosine receptor, that is, caffeine takes up the place of neurochemical adenosine which causes sleep, and the increased level of dopamine gives you a lift to work.

The book also highlights the neuroscientific facts behind engagement. Engagement improves connectivity in the neural pathways, which leads to the secretion of neurotransmitters such as dopamine, serotonin and oxytocin. These neurotransmitters motivate one to work harder. The author also talks about neuroplasticity, which refers to the gradual change in habit through slow change in the neural pathways. Various scientific studies have explained that regular trainings such as driving a car, juggling or meditation gradually changes the associative neural pathways. For example, studies have shown that London black cab drivers have larger hippocampus volume than others due to years of road navigation practice, and three months of juggling practice can increase grey matter density in the visual motion areas. Engaged explains learning as an intrinsic cognitive process. The organisation can only facilitate
the formation of adaptive habits through a rewarding environment. The author proposed an acronym for the components that help in establishing a learning environment. She called it CRANES and NEW (Connection, Retrieval, Attention, Network, Emotion, Sleep and Nutrition, Exercise, Water).

The second part of the book starts with defining the concepts of engagement, and need for reward network activation and its effects on various variables. The organisation must be aware of what they want to do and why they want to do that. An organisation with a positive emotional environment leads to better performance because the interaction of the amygdala and hippocampus activates a reward network. Flow, quality thinking and mindfulness need to be emphasised to help an organisation to train employees’ brain. We can train our brain with the help of meditation. The author also mentions that human beings are socially connected to each other which motivates them. They gain their motivation by interacting with their knowns, colleagues or people with whom they have some bonding.

The third part of the book takes us towards author’s notion that, rather focusing on the individuals, organisations need to focus on their culture, its improvisation and employee’s human value. The author draws a connection between culture and behaviour. People’s behaviour changes from the time they join the organisation, so their responsibility starts from the beginning. The organisation needs to focus on giving positive memories to their employees which leads to increased activity in the reward network. Motivation is a salient factor for getting a desirable outcome.

The last part of the book is dedicated to shaping behaviours of employees as per organisational needs. The author describes inattentional blindness through a study in which a group of professional radiologists performed a lung nodule detection task. This task aims to find abnormalities from given images. This study shows that 83 per cent of the radiologists failed to spot a gorilla which is 48 times bigger than the size of the average nodule. This study shows us our inability to detect unexpected objects which we are not expecting. Organisation influences the behaviour of the employees and supports them in doing what they are good at. The organisation uses different approaches such as the environment and appraisal system to manage employees. These insights will open many doors to employees, as well as for the organisation’s betterment.

I was engaged while reading the book Engaged. This book helps readers to understand neuroscientific terminologies and concepts. The book answers how we can improve cognitive ability and get benefited from it at our workplace. The book may sound superficial for the neuroscientist, similar ideas repeated, but for a beginner in neuroscience, it makes a lot of sense to search for an associative link between an insight and its applications. However, the book may disengage those people whose Monday is not week’s first day because the author repeatedly focuses on maintaining the same energy from Monday to Friday.

Samyak Raj Mehta

Indian Institute of Management, Indore
E-mail: samyakrajm@iimidr.ac.in
Modern brain science provides unique advantage to sustain and exponentially grow and excel in the competitive corporate world. Neuroscience can act as a catalyst in structuring human resource (HR) management practices. It provides valuable insights into the various areas of HR such as leadership, employee engagement, training and development, talent acquisition, and performance management. An attempt has been made to compile reading resources on neuroscience and its application in HR. Below are the list of top-rated books, journal articles, magazine articles, blogs and videos on the recent trends in neuroscience and HR.

**Suggested Books of Reading**


---

1 Indian Institute of Management Indore, Madhya Pradesh, India.


**Journal Articles**


**Magazines Articles**


**Popular Blogs**


Additional Videos

Gore, A. (2013, December 4). Neuroscience and leadership: How to be the boss of your brain. Amanda Gore TV. *YouTube*. Retrieved from https://www.youtube.com/watch?v=IpU9Nv0ulWg


Above are the suggestive lists of some of the popular books, journal articles, magazine articles, blogs and videos on neuroscience and its application in HR (in alphabetical order). It is purely based on the author’s interest.
Volume 26, Issue 1, January 2020

Concept Note

We live in transformative times, that is, times when time itself is under threat by losing on its singular character. Interestingly, our times have become plural times in which individuals who are in the same material and spiritual conditions get divergent, at times conflicting, temporal experience. What we call temporal experience is nothing but the ‘sense of time-space’ which is a holistic awareness one has about one’s existence. Of late, this existence has become problematic due to the anachronistic intervention of one time-space into another time-space. It is an interpellation of known past (déjà vu), unknown present (individual solipsism and social amnesia), and to-be-known future (transcendental) into the present state of existence. Largely, it is a case of time losing its chronology and linearity.

Within the boarder theme which we have submitted, we also seek contributions on the following sub-themes:

- Rational law, rational societies: Economic approaches to social ordering
- Global ethics in global times: Ethics in law/society/education/professions
- Redefining/rediscovering/reinventing human values
- Role of individual in temporal transition
- Communities in transforming times
- Role of religion and other value systems in reimagining societies
- Scope of judicial participation in grappling with temporal pluralism

Submission Timeline:
31 March 2019: Submission of Full Article
April-May 2019: Editorial Comments/ Peer Review
June 2019: Revised Final Versions due to Editors

Manuscript Submission Guidelines:
Please visit: https://in.sagepub.com/en-in/sas/journal/journal-human-values#submission-guidelines

Guest Editors:
Dr R. Rajesh Babu
Professor of Law
Indian Institute of Management Calcutta
E-mail: rajeshbabu@iimcal.ac.in

Dr S. G. Sreejith
Associate Professor and Vice Dean
Jindal Global Law School
E-mail: sgsreejith@jgu.edu.in
Journal of Social Inclusion Studies housed at Indian Institute of Dalit Studies and Published by SAGE Publication invites scholars and practitioners to contribute academic articles to the forthcoming issues of the journal. Journal of Social Inclusion Studies is a peer reviewed, double blinded bi-annual journal.

The journal provides a forum for informed, evidence based debate and discussion on the issues related to social exclusion and discrimination as experienced by persons from the excluded groups and policies to promote social inclusion and equal rights and entitlement. The journal also attempts to document and disseminate the nature, forms and mechanism of social exclusion and discrimination in social, economic, political and cultural spheres based on the group identity such as caste, ethnicity, religion, gender, colour, disability and regional identity; to develop an understanding of the consequences of social exclusion and discrimination on poverty, education, health, political participation and well-being of the marginalised groups.

We appeal to you to contribute cases to the journal and also circulate this information to your colleagues in the industry.

Journal of Social Inclusion Studies provides multi-disciplinary approach to the academic contribution published in the journal.

The Submission Guidelines are: https://in.sagepub.com/en-in/sas/journal-of-social-inclusion-studies/journal203509#submission-guidelines

Submission of manuscript should be made electronically at https://peerreview.sagepub.com/sis
Why won’t they publish you in spite of your brilliance?

...because the reviewer can’t look beyond my missing commas and unnecessary articles.

Is this your research manuscript?

It’s time your research manuscript is judged on its merit, not mistakes.
Get your research publication ready with SAGE MILES.

Why SAGE?

...because everyone needs an editor!

To get a quote and free sample, write to sagemiles@sagepub.in
Refer a friend who might need this service.

KEY HIGHLIGHTS
› Promise of SAGE’s international quality
› Accessible and effective author-editor engagement
› SAGE’s credible certification on edited manuscript
› Competitive rates