

Shaping Personality: What Can Neuroscience Tell Us?

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Today, psychology has become a powerful force that aims to understand human lives, state who we are, and advise us on how we should pursue our lives, and finally, improve the human condition. In this paper we examine how personality, a key area of psychological inquiry, is shaped from a neuroscience point of view and this can help enhance leadership effectiveness and performance. Even with several centuries of history that psychology claims, it has suffered from some form of atomism. Until recently, influenced by behaviourism, psychology was defined merely as the science of behaviour. Elsewhere psychology was associated exclusively with correcting the pathology of the human mental condition (Martin & Mihaly, 2000). These are narrow views. Traditional societies considered human beings as a body-mind-spirit triad. There may be something very valid here. The "spirit" may be too difficult for psychology to accept today as a valid construct. However, mind and body are considered valid categories. This paper examines how the personality, an important aspect of psychological inquiry, gets shaped by mind-body complex. In examining mind and body and its influence on personality, there is a need to study their interaction on two aspects (1) how mind influences the body and vice versa; and (2) how the two in interaction shape our personality. The purpose of this paper is to answer these two questions.

Personality - Emotion: A Nexus

Personality may be defined as the composite of enduring inner characteristics of an individual that guide his or her behaviour. Stearns (2012) in his recent study argued that personality is an individual's characteristic pattern of thought, emotion and behaviour together with the psychological mechanisms - hidden or not - behind those patterns. Among other characteristics of personality, psychologists have always been interested in 'emotion' (Daniel, 2006). Emotions figure so prominently in our lives that it is hard to imagine not having them. It is

interesting to note that psychologists have long considered emotion "one of the most confused and difficult topics in all of psychology" (Plutchik, 1994) and for much of the past century, they have made a point of ignoring emotion. But since the 1980's all this has changed. Psychology has "rediscovered emotion" (Gross, 2006). At long last, psychologists are acknowledging the centrality of emotion in human personality. For the better understanding, emotions may be studied from a variety of other disciplines, including, biology, ethnology, anthropology, sociology, psychiatry, philosophy, neuroscience, economics, linguistics and history. Against this backdrop, it is most essential to orient ourselves about the nature, significance and the whole physiology of emotions. In the subsequent sections of this paper, an attempt will be made to analyze the emotions with reference to human performance. In the last section, a systematic model of neuroscience of leadership will be presented along with its true value for any organization.

Man As An Emotional Being in Interaction

When it comes to humans, the common tendency is to treat experience as the essence of emotion. But still human emotions are so incredibly complex. Understanding emotions is even more difficult since different disciplines view emotions differently. Psychologists want to understand what people 'feel' and neuroscientists want to know how people's brains respond to rewards (Daniel, 2006). Emotions are a part of everything we do, affecting our relationships with others and our own health, as well as influencing important decisions. It is often said that birds fly, fishes swim and human beings feel. Indeed highlighting the social element in emotion, Wagh (1980) used the phrase "feelings of a feeling" to describe the bondage of man with man.

Even Darwin insisted on the unity of human race, and on people seeing each other as members of one family.

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This insistence of unity of human beings may have to be anchored in emotions. The nature of the emotions between humans in interaction may be the key to understanding individual humans themselves. Viewed thus, emotions become the very essence of interaction. Here interaction means not necessarily verbal communication. What this means is a stimulus for emotions arising from "seeing" or remembering the person in interaction with. In other words, emotions, which is a matter of heart, has a quality of mutuality and mutual reinforcement. As opposed to this, thinking, as a matter of the head, has no such reinforcing quality. While feelings and thoughts both involve energy and information, feelings are heavier on energy, thinking is heavier on information. William O'Brien (2006) stressed the importance of emotional development in gaining personal mastery. He pointed out "whatever be the reasons, we do not pursue emotional development with the same maturity with which we pursue physical and intellectual development. This is all the more unfortunate because full emotional development offers the greatest degree of leverage in attaining our full potential".

Pervasiveness of Emotions

In one of her last books, which bears the title of *Mind: An Essay on Human Feeling*, Susan K. Langer (1967) tried to show "that the entire psychological field - including human conception, responsible action, rationality, knowledge - is a vast and branching development of feeling. Emotion is the first link in the evolution of complex adaptive functions that eventually differentiated animals from plants. And unlike language or cognition, affective responsiveness (emotional responsiveness) is universal among the animal species including human beings. Emotion is the "feeling" aspect of consciousness, characterized by a certain physical arousal, a certain behavior that reveals the feelings to the outside world, and an inner awareness of feelings. Charles Darwin (1898) was one of the first to theorise that emotions beget emotions and, therefore, emotions are temporally linked.

Pervasiveness of emotions can be further observed

when we examine the link between emotions and kinesthetic responses. Kinesthetic oriented people respond to touch and act on how they 'feel'. Physical contact and feelings are their primary love language. Kinesthetic persons often use terms such as "I Just felt as if" or " I feel like we really are really connected". When communicating with a kinesthetic-oriented person, a soft touch on the arm means he cares, interested, and listening. All human beings, no matter what their culture, would show the same facial expression because the facial muscles evolved to communicate specific information to onlookers. For example, an angry face would signal to onlookers that they should act submission or expect a fight. Watch a gifted actor at work and observe how easily he draws an audience into his emotional orbit. Emotions also have ways of spreading across the members of a group. A study at the Yale University School of Management (2006) found that among working groups, cheerfulness and warmth spread most easily, while irritability is less contagious and depression spreads hardly at all. When people feel good, they work at their best. Writing on the significance of emotion, Darwin (1898) said emotion is a primary judgment on the world which directs our subsequent knowledge of it. For example, loneliness as an emotion teaches an individual to connect with his relatives / friends to overcome loneliness. There is also an action orientation to emotion. As Greenspan (2012) observed "emotion as a teacher can solve many of human problems if one can understand it properly". Emotions not only make us feel something, they make us feel like doing something. Facial muscles are so naturally designed to manifest emotions. Out of the twenty-four pairs of facial muscles, eighteen muscles are involved in emotion expressive behavior and the other six pairs are involved in chewing. Efforts to understand emotions have a long history. For instance, Leonardo da Vinci (1452-1519), the man who made us smile looking at Mona Lisa did a seminal research in the area of inventiveness of the human body. The enigmatic smile on the face of Mona Lisa was the outcome of his research. He undertook to reveal the musculature; bone structure, veins and blood

circulation, and the "spirit" that stirs within the human to make a smile among other manifestations of emotions. Leonardo decided to explore a study of anatomy for its own sake, as well as to inform the emotive impulse behind the action of his character on the canvas. It is very interesting to note that Leonardo dissected some 30 bodies and this was possible as bodies of executed criminals, deceased homeless beggars were gathered for medical study in universities even then. His drawing of the skull having sliced it vertically and the right half frontally reveals juxtapositions of CAT drawings and scans. In 1508-09, having gained a reputation to conduct autopsy, Leonardo recounts in his notes, how he sat with a man, over a hundred years, who felt nothing wrong with his body other than weakness, and then moved slowly "into a sweet death". As a true artist, he wants to train his eyes to paint a "true to nature" drawing on 'emotional resources' that come from within. He clearly understood the sources of the human body for its individual uniqueness. This has made him a genius.

We may be able to "feel" what others are feeling (Hansen, 2004). The ability to interpret the facial expressions of others as a particular emotion to be a function of one side of the brain more than the other. Researchers have found that when people are asked to identify the emotion on another person's face, the right hemisphere is more active than the left, particularly in women (Vogel & Rodgers, 2002). This difference is being weak in childhood but in adulthood with children being less able to identify negative emotions as well as positive emotions when compared to adults (Barth & Boles, 1999). This finding is with early research that assigns the reconnection of faces to the right hemisphere (Berent, 1977; Ellis, 1983). In fact, Charles Darwin (1898) was one of the first to theorize that emotions were a product of evolution and, therefore, universal. All human beings, no matter what their culture, would show the same facial expression because the facial muscles evolved to communicate specific information to onlookers. For example, an angry face would signal to onlookers that they should act

submissively or expect a fight. Daniel Goleman, once a science writer for numerous periodicals and newspapers, popularised the concept of 'emotional intelligence' in the 1990s. According to Goleman, emotions flow most strongly from the most powerful person to others. Emotional intelligence highlights the skills needed to foster an understanding of complex emotions, relationships among emotions, and relationships between emotions and behavioral consequences. An emotionally intelligent person sense that he can better "read" a person or a situation and act appropriately, given environmental demands. Writing about emotions and emotional experience may be particularly beneficial to individuals who prefer to use an emotional approach in dealing with the problems in their lives (Austefeld & Stanton, 2008). As Salovey (2002) writes, dealing with the emotional aspects of life is certainly a balancing act.

Understanding Neuroscience of Leadership

Human brain is like a pharmacy; and it never closes, dispensing chemicals at all hours (Borg, 2010). Every thought we have produced has a biochemical reaction - with some reacting more than others depending on the emotional intensity of the thought. The mind and the body are inextricably linked. Our thinking generates emotions that generate chemicals. These chemicals have evolutionary benefits and their overdose would harm us when overused. Besides chemicals, neural activities by themselves play a role. The growth of the connections between our neurons (brain cells) is responsible for the very growth of our brain. The more the brain is used and 'tested', the more those neural connections get stronger and multiply, forming even more connections. Advances in neuroscience prove that the brain is 'plastic' and is constantly being modified by our experiences. Forming part of our central nervous system, these brain cells communicate with other cells individually or as a part of a network of millions or billions of other cells. As Borg (2010) writes, 'cells that fire together wire together'.

The plasticity referred to earlier in the context of the brain is christened 'neuroplasticity' (Lazarus, 2000). This

is indeed a fascinating idea. Simply thinking about or carrying out specific actions in our mind changes brain structure. For example, practicing with the strings of a guitar in our head actually rewires our brain. This makes it easier when we get round to actually practicing as we have strengthened those areas of the brain responsible for playing the guitar. This applies to the visual faculty too. The power of imagery is the essence of 'visualization'. Visualization forms an important means of enhancing performance as in the case of sports persons, creative artistes, stage performers and even business leaders. The reason why visualisation is so powerful and effective is that the act of imagination actually creates neural pathways of experience. Research in neuroscience has shown that our thoughts actually alter the brains wiring and its biochemistry. One can say that thinking is not something that happens to a person. It is something that he does (Borg, 2011).

In the case of using imagination in the field of sports, it may be noted that visualization forms a very important part of the science of sports psychology. Sportspersons may use all of their senses. In addition to visualizing the breasting of the tape, a sportsperson may hear (auditory) the crowd and feel the vitality in his or her body (kinesthetic). Sportspersons can repeatedly experience the loom race or toss the ball up and hit the second serve ace on match point at Wimbledon. This gives the illusion of having been in a pressure situation and coming through it. It encourages belief and promotes mental toughness that we keep hearing about in the world of sports. As sports persons strengthen the path for the neurons in the brain through constant repetition, they become more proficient once they are in the actual situation or in practice. For instance, Johny Wilkinson, England's record-points scorer in international rugby, illustrated the power of visualization very well when he said, "You have to be able to see perfection before you can achieve it. So I might do parts of a practice session in which I set up a ball, go through the motions, see the kick in my head..... that can be a perfect session.....". Here 'visualization' is treated as the outcome of a positive emotion.

Against this backdrop, an attempt is made to understand the 'neuroscience of leadership'. It is about understanding of leadership and its connection with the brain to help drive efficiency and performance. Although the brain is often likened to a computer, to appreciate its capabilities we have to remember that it is a biological organ that grows and evolves. During all of our working hours - and even during sleep - we are engaged in experiences that create networks of neural 'path ways' that are essential in forging retrievable memories. In order to execute their complex tasks, all of the neurons have to communicate back and forth with each other by twin processes that are: (1) Electrical; via the nerve impulses; and (2) Chemical ; using neurotransmitters. A neuron looks a little like a small plant with a root at both ends. From the body of the neurons there are hundreds of threads known as dendrites; these are designed to pick up signals from neighboring cells. Neuro transmitters are associated chemicals located and released in the brain to allow an impulse from one nerve cell to another (Sinha, 2011). Dopamine is the neurotransmitter associated with pleasure. Anything that produces a positive feeling in a human being stimulates the release of dopamine in the brain. This 'positive feeling' also creates the anticipation of pleasure the next time. Dopamine is also what makes us more likely to opt for instant gratification, rather than waiting for future rewards that may be even more gratifying. For example, indulging in the chocolate cake the day after one has resolved to go on a diet or buying the latest Smartphone on the day of its release instead of waiting for prices to go down. Low levels of dopamine cause a wide variety of diseases and disorders, such as anxiety, depression, or even, schizophrenia and bipolar disorders. One of the key challenges faced by an organization is building leader capability. It is not the 'pat on the back' but a continuous reinforcement of strengths and recognition of employee contributions that help an employee feel that someone "cares". People at the work place need to feel that the organization is invested in them and their careers (Sinha, 2011). A leader who is seen as an emotional partner and nurturing often goes a long way.

The most challenging question may be how a leader keeps dopamine levels of the employees at a high level that they come to work every morning feeling excited about the next contribution they will make? It is also useful to understand that different parts of the brain have specialized functions. The prefrontal cortex, located in the very front of the brain beneath the forehead is responsible for executive functions. These include mediating conflicting thoughts, making choices between right and wrong or good and bad, and predicting the future events. It also governs individual dispositions like anger and also the larger abilities with social implications like leading teams (by leaders) or influencing the rabble (like political leaders) etc.

It is the brain centre that primarily anchors one's sentience, intelligence and personality. In his book titled "Your Brain at Work", David Rock (2009) explains the Prefrontal Context to be like the "stage with a director". He says that at any point of time there should be a limited number of actors who can be on the stage for the audience to see them clearly and focus on what they are doing. If the director of the play loses control and allows too many actors on stage, the stage will become chaotic. The director has to not just ensure that the stage is optimally designed and the actors are in right numbers but also make decisions on whom to keep on and off the stage at what time, when to pay close attention to different things, when to take step back and reflect on what impact he or she may be having etc. Similarly, a leader has to focus holistically on the tasks, people and resources, and long-term sustainability. The learnings from neuroscience can be of great help to management and leadership in answering vexing questions.

In conclusion it may be noted that people with neuroscience of leadership traits radiate confidence, poise and authority, they know how to connect with others, and, most importantly, they build on their own strengths and are genuine. Therefore, building "neural networks" within our own individual brains as well as helping others with their neural networks (even if very ambitious) will be a strategy worth considering. This

will, in future, be important for effective leaders for their individual success and for the improved welfare and performance of their employees.

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