How Neurosciences Effects on Decision Making and Leadership

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Abstract

Our aim in this article is to overview the linkage between the promising field of neuroscience with leadership and decision making theory and practice. We reviewed latest research on leadership which involves neuroscience applications and its effect on decision making and leadership. How neuroscience influence the leader's behavior and decision making. Finally we discussed the potential and limitation of neuroscience application.

Key Words: *Neuroscience, Leadership, Effect, Decision Making.*

Introduction

Thousands of studies have been conducting to pertain generic basis (Arvey, Rotundo, Johnson, Zhang, & McGue, 2006; Arvey, Zhang, Avolio, & Krueger, 2007; Bass & Bass, 2009; Zhang, Ilies, & Arvey, 2009) and personality dimensions (Bono & Judge, 2004) to attain leadership role. Management means the process of dealing, controlling things or people and Neuroscience is known as the study of development of nervous system, what it does and its structure. Neuroscientist focused on the brain, behaviour and cognitive functions. According to Annette kortovna, decision making perception, behaviour and cognition are influenced by emotions.

Decisions are a predestined element of human actions. Human Life is full of choices and decisions and the key question is how people make decisions not only in workplace but also in daily routine life. It is difficult to artifact human action in single course of action. To a certain point it reflects interface of different dedicated subsystems, which intermingle impeccably to determine behavior, but at same time, they compete with each other. In general, human behavior is not in the stable and comprehensive control of vigilant and perfect parsimonious calculations. It is product of an unbalanced and unreasonable compound of reflex procedures, impulse, fashion, hysteria, instincts, routine and many more. M.F. Bear, B.W. Connors and M.A. Paradiso (2002), put importance on brain and it’s testing according to the external impulses rather than considers inherited features and DNA.

Jyotirmaya Satpathy (2012) stated that decision making process is a cognitive process and a base of selecting assessment and line of action between numerous alternative scenarios. Process is a regular procedure included in relation with surroundings. Analysis is apprehensive with sense of decision building, invariant and rationality decision making it leads to compensatory interaction of decision making related regions.

The first formal paper in neuromanagement reflected collaborated effort between Breiter, Shizgal and Kahneman and was published in 2001 (Breiter 2001). Emotions can be explained as “gut feeling” that plays an influential role on behavior and decision. In the life of leader decisions should be based on facts and figures not on the emotions.

Social cognitive neuroscience is the best way to study of leadership in between different branches of neuroscience. Social cognitive neuroscience is the best way to study the human interaction (Ochsner and Lieberman, 2001. Adolphs (2009), Tabibnia, Satpute and Lieberman (2008) studied that feelings, thoughts and intentions of others, fairness vs unfairness are based on the neural basis.

Pedler et al., (1991) identified attributes required for leaders are fundamental skills, technical skills, interpersonal skills, conceptual skills, decision making skills, time management skills, relevant professional knowledge, Emotional buoyancy, pro-active, creativity, Mental alertness. The research paper explores the effect of neuroscience on leadership from past studies. This review is organized into two parts. First we try to find the relationship of neuroscience, decision making and leadership. Second we will discuss the limitations faced the researchers to conduct intra disciplinary studies. Finally we conclude the discussion the potential applications of neurosciences applications.

It is difficult and challenging to make theoretical connection between influence of brain activity on leadership qualities and behaviours. According to Walman, Balthazard and Peterson, coherence is a proper word for the exploration of behaviour associated with leadership. The purpose of the research is to find the relationship between neuromanagement and leadership. Here we discuss different theories to explore it, such as cognitive (Henry, 1976) theory, coherence theory (Cacioppo, Berntson & Nusbaum, 2008). Neuroscience is the study of advance study of human’s brain, the advancement of neuroscience help the researchers to find the relationship between marketing, management, economic, leadership and organizational behaviour. Neuromanagemnt is a part of neurosciences which deals the understanding and management of brain towards emotions, thoughts and behaviour.

Henry Mintberg (1976) suggested the relevance of leadership and management with the difference between the left and right brain. He argued the strength of two hemisphere of brain create the difference in managers. Finkelstein and Hambrick (1996) summarized, the managers with left hemisphere (logical & rational thinker) dominance may become good planner while as managers with right hemisphere (imaginative, creator, emotional) dominance may become good managers or leaders. This theory were criticised by many researchers such as Hines (1987).

Coherence is one of the best ways to measure the interconnection of brain. Cacioppo, Berntson & Nusbaum (2008) stated that coherence is suitable to examine the leadership/complex behaviour. Coherence is usually measured in term of percentage. 90% coherence means strong coordination between the two part of the brain and 10% shows the less coordination between the two parts of the brain. According to Walman, Balthazard and Peterson coherence level is the indicator of behavioural difference for different location of brain. (Thatcher, Karuse, & Hrybyk, 1986; Thatcher, North, & Biver, 2007). High coherence in the right side of the hemisphere suggests great understanding and emotional balance of one’s own as well as others. Rather emphasizing of left/right hemisphere of brain, focus on front regions seems more logical. Front region is the important part of regulating the emotions, expressions and visionary behaviour (Hagmann, Cammoun, Gigandet, Meuli & Honey, 2008).

Management and Psychology has bridged by the Neuromanagement (Jyotirmaya Satpathy, 2012). It challenged the management assumption of coherence and cognitive theories about the decision making. The main difference between theories and neuromanagement is the logic of decision making. Decision can be a rational or irrational depends upon the emotional or reasoning process.

Leader should have the ability to convey or indulge the vision in the followers and create motivation, commitment towards their goals/ objectives. Emotions play a vital role for both the emotional leaders and followers (Barsade & Gibson, 2007; George, 2000). Barsade & Gibson (2007) stated that Effective leadership influence the others inspirations and hope, despite of the ambiguity and fears. Neuroscientists analyze the brain on the basis of logics, firing and dormant states of neurons. Leaders are involved in multi layered contexts as compare to linear and unidirectional processes. Leadership deals with past experiences and future expectations that can be a part of relational interactions. Leadership and neurosciences are two different kind of fields. Negal (1961) argues the lack of fit between the logics of organizations and terminologies of neuroscientific theories.

A study of decision making from the last centuries is shifted from conventional to emerging synthetic disciplines. As in neuroscience, the main supposition is combining both empirical and theoretical tackle of neurosciences, management and psychology into solitary imminent, follow-on will provide valuable insights to all disciplines. Many theories from management and psychology have begun to redistribute the neuro-biological understanding of decision making. During the past years natural and social scientists studies decision making with neurosciences aspect in which "brain" and "decision making" are keyword, and collectively they gave it the name of neuromanagement (Jyotirmaya Satpathy, 2012). Brain cannot triggered decision without the support of enough information gathered from variety of biological mechanism, as in neuro data the first impression effect the decision.

Framework of Decisions

In adaptive behavior two neural systems behavioral and cognitive neurosciences are involved. It is also observed that Basil ganglia (BG) and neuro-modulator dopamine (DA) learning are participated in action, reinforcement and selection learning (Frank, 2005;;, 2004; Brown, Bullock, & Grossberg, 1999; Beiser & Houk, 1998; Mink, 1996 ;Frank, 2005; Gurney, Prescott, & Redgrave, 2001;Frank, Loughry, & O'Reilly, 2001; O'Reilly & Frank, 2006). Patients of Parkinson's, who had lower DA in BG are impaired to have choice that entail learning from error and trail (Shohamy et al., 2004; Squire, Mangels & Knowlton, 1996;). The prefrontal cortex (PFC) vigorously maintains information in working memory via continual neural firing (Goldman-Rakic, 1995; Miller, Erickson, & Desimone, 1996; Fuster, 1997), and has a zenith behind biasing cause to maneuver actions (Miller & Cohen, 2001 ; J. D. Cohen, McClelland & Dunbar, 1990).

Rolls, 1996; Kringelbach & Rolls, 2004; Tremblay & Schultz, 2000; Schoenbaum, Setlow, Saddoris, & Gallagher, 2003, propose that orbitofrontal and ventromedial cortices are significant for modifying decision making in humans. Orbitofrontal cortex (OFC) can damage in patients demonstrate loss in their everyday lives' decision-making, which are recognized in the laboratory (Anderson, Tranel, Damasio & Bechara, 1998). Poor decision makers, such as drug abusers, have gray matter level and compact OFC metabolism (Volkow, Fowler, & Wang, 2003; Milham et al., 2006).

Amygdala and hippocampus are the main source of emotions inside the limbic system. As the limbic system is coupled to scheming approach of pain and pleasure. Whereas, for reaction of stimuli, amygdala and hippcampus perform a role in short term memory creation. The interaction between them interprets the stimulus through neuronal activity (memories), which are created previously and control our reactions. Ledoux (1998) model illustrated the sequence of knowledge in brain to the amygdala. Sensory thalamus received and sent the stimulus to the sensory thalamus, and then stimulus can take either quick reaction (low road) or incorporating prior memories (high road) to the amygdala, to emit.

The signal will emit fear response to amygdala by bypassing other memories in the sensory cortex in case of danger. It will increase heart rate and freezing through physiological changes, which will stop us walking directly in a hazardous circumstances. When the data has been passed to the amygdala to admittance more reminiscences, and has sent back to the amygdala to evaluate situation to emanate conversant reaction. In the action we close our eyes in the period of horror movies to understand in a while after that there was no actual hazard. In such situations, only subconscious will react because of no time for cognitive thought process.

The brain tag's the stimuli gratifying or not by connecting the other similar memories in the brain. Emotional learning is more powerful in most of the time that it will bypass the rational. Logically, it is not the optimum solution but emotional learning is so impactful and quick that brain cannot resist. it is difficult to break that pattern of the brain because the more frequent action performance has strong association with brain. The emotion influenced perception and on decision making.

Neuroscience and Leadership Research

Many researchers have been done to connect the neuro-logical faction to leader behavior. Waldman et al. (2011b) hardened a sculpt to elaborate the mediating effect of visionary communication between coherence in the brains' right frontal regions and adherent perceptions of leader magnetism. Right frontal portion of the brains' activity would base on the socialized vision. Whether Cacioppo al (2003) and Lieberman (2007) has noted that the social cognitive neuroscience, most complex and do not map into a single location in the brain. Social cognitive phenomena linked with vision as socialization and other important aspects of leaders' behavior are required joint distributed effort of multiple part of brain (Nolte, 2002; Hagmann et. al., 2008; Cacioppo et al., 2008). Waldman et al. (2011b) also discussed the analysis of EEG derived data of resting participants as divergent to when they were delivering or contemplative vision statements, even though their EEG consideration also integrated the latter, useful stipulation. Leaders can be described as less or more complex based attributes and unique roles that they acquire Eggers, Hannah and Jennings (2008) and Eggers, Ben-Yoav Nobel and Hannah (2010). Hannah et al. (2011) projected and proved as predictors for leader self complexity in following terms: 1- decision-making should based on the detail understanding of demands of conflicting behavior, and (2) ability to form effectual relations or supporting know-how (Ferris et al., 2007). Neurological procedures were found more in predicting leader density as compare to skill based predictors (Hannah et al. 2011; Lord & Hall, 2005).

Conclusion

What happens in brain when leader is in the procedure of decision making or took decision? Will the study of neuroscience helps to answer this question? New theories on the basis of neuroleader resource model will shortly take part in in explaining and predicting strategic choice and individual behavior (Satpathy, J., 2015). The present attempt (perhaps) provides a conceptual framework and understanding of effect of neuroscience on decision making and leadership.

Research at the juncture of leadership psychology and neuroscience, helps in the measurement of brain activity at time of choices, offer the measurement of brain's response at the time of decision, explicate a customary model for decision-making with spanning and relating neuro-psycho and leadership's level of study and effort to construct model capable of predicting decision making. Many studies have to be done to study the brain activity and neural activities. In light of some research and theories on neuroscience, leadership and making the decision, it is important to study the technique of study the brain. Research on neuro data reports that the indiviual's decision sometime stick on the first impression. Confirmatory biases may come into sight from similar set of information indulgence constraints. In this direction future work will help to uncover the brain process, to influence decision making and change in leadership style. Neuroleader model help in planning a crucial role in building reliable theories to explain the effect of decision making in leadership style.

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