

## *Stimulation Of Dopamine Neurons Can Modify Human Learning Process*

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Human learning process has always been a mystery to the scientists despite the numerous researches those have been conducted in these areas. Many new facts are being unearthed by the research teams every year. One of the interesting studies on human learning process has been conducted by a team of neuroscientists and neurosurgeons of the University of Pennsylvania. The lead study author for this research is Ashwin Ramayya, MD/PhD student at the University of Pennsylvania. This study was sponsored by the National Institutes of Health. As per their research findings, human learning process can be altered through the stimulation of dopamine neurons in Substantia Nigra region, which is located in the deep brain.

As per the research, human actions were controlled by the reward factor. The research indicates that stimulation of Substantia Nigra along with the reward made the subjects to be positively biased towards the actions that fetched them rewards. They were more inclined to repeat the actions for which they received the rewards. This behavior has already been established among animals.

The research was conducted with eleven participants that were part of the deep brain stimulation treatment team for Parkinson's Disease. The subjects were given stimulation in the Substantia Nigra after reward. This made the participants press the button that fetched them the reward repeatedly. The behavior continued however even when the reward was no longer available when the button was pressed. Though the conditioned behavior continued, it however reduced performance level of the participants in the game.

Similar studies have already been conducted for animals. This however is the first study that uses human subjects in dopaminergic neurons stimulation in the Substantia Nigra region according to Gordon Baltuch, MD PhD, the co-senior author of the study, a professor of Neurosurgery, Perelman School of Medicine at the University of Pennsylvania.

He also observes that this study can be furthered in the direction of pathological reward-based learning to treat substance abuse cases and compulsive behavior issues such as gambling or other forms of addictive behavior. According to Gordon Baltuch, the reward based dopamine stimulation will increase the effectiveness of the rehabilitation process among the patients. This study can also be used to improve the intellectual performance of the individuals. It need not be limited to rehabilitation processes but can be used more effectively in areas that are more positive as well. This dopamine stimulation study very significant because it is targeting the area of human learning. Any positive discovery in this direction will have far reaching effects on human performance. This will further lead to tailored or programmed excellence in learning. One can choose to excel in one or multiple fields of learning.

The study paper is expected to unearth many other interesting insights in the area of human learning. The study requires further research and testing before the concepts can be decisively used in a fully controlled learning process. Taking the research one step further can help individuals gain faster learning abilities in any given area.