

Public Abstract

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Psychophysiological Assessment of Motivational Processing in Parkinson's Disease

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Neural circuits in the human brain that transmit dopamine have been shown to play an important role in learning and motivation. Individuals with disrupted dopamine transmission due to Parkinson's disease show selective deficits on certain types of learning, which may be the result of impaired motivational processes. Electrophysiological techniques were used to evaluate a brain wave called the stimulus-preceding negativity (SPN), which is a measure that reflects motivational anticipation. The SPN was assessed in Parkinson's disease patients to test whether patients show reduced responsiveness to feedback and reward stimuli during a learning task. Patients exhibited a reduced SPN compared to controls when relatively large monetary incentives were expected. Results suggest that impaired processing within the brain's reward processing circuitry may contribute to learning deficits in Parkinson's disease and that the SPN reflects brain activity associated with dopamine transmission. Evidence of reduced reward processing in Parkinson's disease could help us better understand and treat the common motivation-related symptoms of the disease, such as the depression, reduced facial expression, flat tone of voice, and avoidance of novel experiences.