APATHY AND IMPLICIT CATEGORY LEARNING IN NONDEMENTED PARKINSON’S DISEASE PATIENTS

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Introduction: Apathy contributes significantly to cognitive deficits in patients with Parkinson’s disease (PD) and results in greater impairment than depression. Apathy in PD is associated with ventral striatal dysfunction, a region known to be involved in reinforcement-based learning. No study, however, has examined whether high apathy PD patients are impaired on reinforcement-based learning tasks.

Aims: The primary aim of this study was to examine reinforcement-based learning in high apathy PD patients using an implicit category learning task that is believed to rely on striatal dopamine and has been shown to be sensitive to the cognitive deficits observed in PD patients.

Methods: Forty nine nondemented PD patients were classified as either having clinical levels of apathy (n=21) or no apathy (n=28) using cut-off scores for the Apathy Scale. Forty four controls also participated. PD subgroups did not differ in level of global cognitive functioning. Participants were shown individual stimuli, asked to classify it into one of two categories, and were given corrective feedback following each response. The implicit category rule involved a quadratic relationship between two of the stimulus dimensions.

Results: High apathy PD patients were impaired on the category learning task relative to both low apathy PD patients and controls, whereas the latter two groups did not differ. Importantly, the presence of depression did not account for these differences.

Conclusions: Apathy contributes uniquely to PD patients´ deficits in reinforcement-based learning of implicit information. This may be due to the greater involvement of the ventral striatum in apathetic PD patients.