

Examining Apathy and Depression in Parkinson's Disease

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INTRODUCTION

Parkinson's disease (PD) is frequently associated with emotional changes such as depression, anxiety, and reduced emotion and facial expression. Recent attention has focused on a 'syndrome of apathy,' that may reflect a primary loss of motivation. Apathy refers to a cluster of behavioral, cognitive, and emotional features such as lack of effort, loss of interest, and flattened emotions. It has been argued that "apathy" is distinct from depression and can occur in the absence of depression. Multiple studies have established that depression is common in PD samples (approx. 24-40%). Apathy, in contrast, is relatively understudied. The purpose of this study was to examine the prevalence and severity of apathy in PD, and compare it to that of a movement disorder control group, Dystonia (DYS).

HYPOTHESES

HYPOTHESIS 1: PD patients will have a *higher prevalence* of apathy and *more severe* apathy than another movement disordered group of likely equal motor and functional disability (DYS).

This may be due differential involvement of frontal subcortical circuitry (specifically, anterior cingulate cortex-basal ganglia pathology in PD) in PD vs. DYS.

HYPOTHESIS 2: Apathy is a core feature of PD and not simply a symptom of depression. Thus, a larger proportion of PD patients will have apathy in the absence of depression than will DYS.

HYPOTHESIS 3: Due to disease pathology, apathy will be more severe in the later stages of illness in PD.

PARTICIPANTS

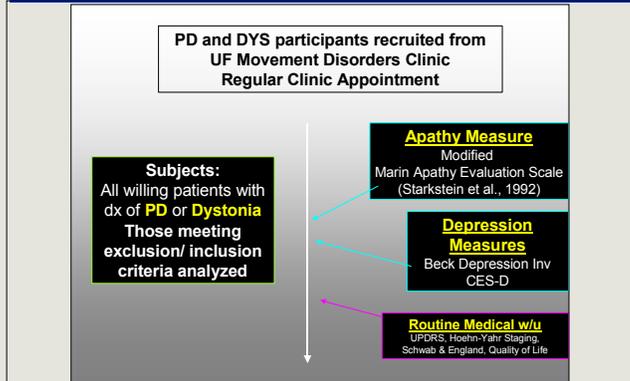
80 patients with idiopathic Parkinson's Disease (PD)
 20 patients with idiopathic adult onset Dystonia* (DYS)

	Parkinson's	Dystonia Controls
Age (yrs)	68.9 (9.5)	60.9 (11.9) ¹
Ed (yrs)	14.8 (3.0)	15.1 (2.1)
Sex	55M, 25F	6M, 14F ¹
DOPA meds	95%	----
Anti-depress	51%	20% ¹
Yrs Symptoms	6.4 (5.7)	8.1 (7.8)
Hoehn Yahr Stage	2.4 (.66)	----

¹ = $p < 0.05$

*Dystonia (DYS) = progressive, neurodegenerative movement disorder characterized by sustained muscle contractions and abnormal movements and postures.

METHODS



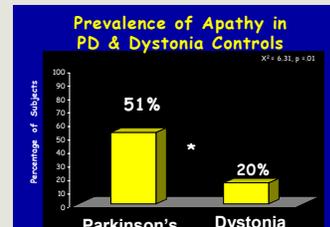
Marin Apathy Evaluation Scale-modified (AES)- 14 item self-report measure of apathy, modified by Starkstein et al. (1992). Sample item: "Are you interested in learning new things?" Likert scale ranges from 0 to 3.

Beck Depression Inventory I (BDI-I)- 21 item self-report measure of depressive symptoms that can be divided into ideational and somatic depressive symptoms. Likert scale ranges from 0-3.

Centers for Epidemiologic Studies-Depression Scale (CES-D)-20 item self-report scale of depressive symptoms. Sample item: "I felt that I could not shake off the blues even with help from my friends and family." Likert scale ranges from 0-3.

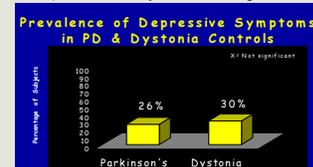
RESULTS

Result 1: PD subjects had a *significantly higher prevalence* of self-reported apathy than DYS (see graph below). The severity of apathy was significantly greater in PD's than in controls ($t=2.0$, $p=.047$).



NOTE: Apathy based on scores ≥ 14 on the AES.

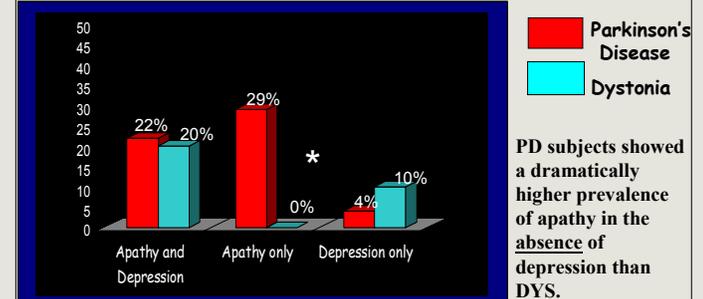
In contrast to apathy, prevalence of depression based on the BDI was *similar* in PD's and DYS (see graph below). Additionally, the CES-D provided a similar result.



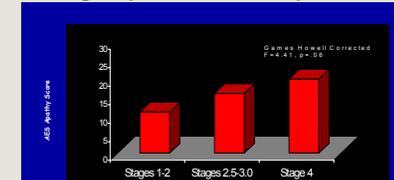
NOTE: A score of score of ≥ 14 on the BDI was used to classify depressive symptoms

RESULTS (cont.)

Result 2: OVERLAP between depression and apathy symptoms.



Result 3: Apathy and PD severity.



Apathy scores increased with severity of PD (Hoehn-Yahr) trend ($p=.06$)

CONCLUSION

Over half of the PD sample (51%) showed apathy, while only 20% of the DYS sample revealed apathy on the AES questionnaire. However, the groups were similar in terms of depressive symptoms (based both on the BDI and CES-D).

Further, almost 30% of the PDs showed apathy in the absence of depression, whereas none of the DYS group showed this result.

These results support the hypothesis that apathy may be a "core feature" of PD, and not simply a symptom of depression.

It appears that symptoms of depression and apathy are able to be 'dissociated' on an individual patient level.

It may be that these two types of symptoms are able to be dissociated based on pathology or pathophysiology. Studies have typically associated orbitofrontal-basal ganglia connections in the presence of depression in PD, whereas anterior cingulate-basal ganglia connections are suggested in the presence of apathy. It is possible that PD subjects with apathy in the absence of depression have more pathological involvement of the anterior cingulate than the orbitofrontal area, but this remains for future investigation.

Further extension of this study will involve factor analysis of questionnaire items to examine whether item responses "cluster" into apathy and depression factors. If apathy continues to prove to be a "core feature" of PD, it will become important for clinicians to screen for apathy, be able to separate it from depression (for treatment purposes), and to counsel patients and family members.