Parkinson’s disease as a neuropsychiatric disorder: focus on non-motor symptoms

Marianna Amboni
Centro Malattia di Parkinson e disturbi del movimento, CEMAND, Salerno, Italy
IDC Hermitage-Capodimonte, Napoli, Italy
Parkinson’s Disease: The Quintessential Neuropsychiatric Disorder

Daniel Weintraub, MD,¹,²* and David J. Burn, MD³,⁴

Movement Disorders, Vol. 26, No. 6, 2011

Number of Publications 1986-2010

- Cognition
- Depression
- Psychosis
- ICD’s
- Anxiety
- Apathy
- Sleep and wakefulness

Number of Publications

- 1986-1990
- 1991-1995
- 1996-2000
- 2001-2005
- 2005-2010
Outlines

- Cognitive impairment in PD (mild cognitive impairment and dementia)
- Affective disorders in PD (depression and anxiety)
- Psychosis and impulse control disorders in PD
Cognitive dysfunction in non-demented PD patients

Cognitive impairment can be detected in patients with newly diagnosed PD, and there is significant decline in cognitive function in the first few years following diagnosis.

Cognitive domains affected in PD include executive function (affecting planning, decision making and concept formation), memory, visuospatial processing, attention and language.

The pattern of presentation of cognitive impairment is heterogeneous in terms of the domains affected. Many patients show deficits in multiple domains.

There is some evidence that deficits in certain domains may be associated with an increased risk of developing dementia.

(From Barone et al, 2011)
Diagnostic Criteria for Mild Cognitive Impairment in Parkinson’s Disease: Movement Disorder Society Task Force Guidelines

Irene Litvan, MD, Jennifer G. Goldman, MD, MS, Alexander I. Tröster, PhD, Ben A. Schmand, PhD, Daniel Weintraub, MD, Ronald C. Petersen, MD, PhD, Brit Mollenhauer, MD, Charles H. Adler, MD, PhD, Karen Marder, MD, Caroline H. Williams-Gray, MRCP, PhD, Dag Aarsland, MD, PhD, Jaime Kulisevsky, MD, PhD, Maria C. Rodriguez-Oroz, MD, PhD, David J. Burn, MD, FRCP, Roger A. Barker, BSc, MBBS, MRCP, PhD, and Murat Emre, MD

TABLE 1. Criteria for the Diagnosis of PD-MCI

**I. Inclusion criteria**

- Diagnosis of Parkinson’s disease as based on the UK PD Brain Bank Criteria
- Gradual decline, in the context of established PD, in cognitive ability reported by either the patient or informant, or observed by the clinician
- Cognitive deficits on either formal neuropsychological testing or a scale of global cognitive abilities (detailed in section III)
- Cognitive deficits are not sufficient to interfere significantly with functional independence, although subtle difficulties on complex functional tasks may be present

**II. Exclusion criteria**

- Diagnosis of PD dementia based on MDS Task Force proposed criteria
- Other primary explanations for cognitive impairment (e.g., delirium, stroke, major depression, metabolic abnormalities, adverse effects of medication, or head trauma)
- Other PD-associated comorbid conditions (e.g., motor impairment or severe anxiety, depression, excessive daytime sleepiness, or psychosis) that, in the opinion of the clinician, significantly influence cognitive testing
Clinical diagnostic criteria for Dementia associated with Parkinson’s disease

I. Core features
   1. Diagnosis of Parkinson’s disease according to Queen Square Brain Bank criteria
   2. A dementia syndrome with insidious onset and slow progression, developing within the context of established Parkinson’s disease and diagnosed by history, clinical, and mental examination, defined as:
      • Impairment in more than one cognitive domain
      • Representing a decline from premorbid level
      • Deficits severe enough to impair daily life (social, occupational, or personal care), independent of the impairment ascribable to motor or autonomic symptoms

II. Associated clinical features
    → Typical cognitive profile
    1. Cognitive features:
       • Attention: Impaired. Impairment in spontaneous and focused attention, poor performance in attentional tasks; performance may fluctuate during the day and from day to day
       • Executive functions: Impaired. Impairment in tasks requiring initiation, planning, concept formation, rule finding, set shifting or set maintenance; impaired mental speed (bradyphrenia)
       • Visuo-spatial functions: Impaired. Impairment in tasks requiring visual-spatial orientation, perception, or construction
       • Memory: Impaired. Impairment in free recall of recent events or in tasks requiring learning new material, memory usually improves with cueing, recognition is usually better than free recall
       • Language: Core functions largely preserved. Word finding difficulties and impaired comprehension of complex sentences may be present
    2. Behavioral features:
       • Apathy: decreased spontaneity; loss of motivation, interest, and effortful behavior
       • Changes in personality and mood including depressive features and anxiety
       • Hallucinations: mostly visual, usually complex, formed visions of people, animals or objects
       • Delusions: usually paranoid, such as infidelity, or phantom boarder (unwelcome guests living in the home) delusions
       • Excessive daytime sleepiness

III. Features which do not exclude PD-D, but make the diagnosis uncertain
    • Co-existence of any other abnormality which may by itself cause cognitive impairment, but judged not to be the cause of dementia, e.g. presence of relevant vascular disease in imaging
    • Time interval between the development of motor and cognitive symptoms not known
DIAGNOSTIC ALGORHYTHM FOR PDD

PD + DEMENTIA

TYPICAL COGNITIVE PROFILE

YES

FEATRUES THAT MAKE THE DIAGNOSIS UNCERTAIN

NO

POSSIBLE PDD

PROBABLY PDD

NO

YES
IV. Features suggesting other conditions or diseases as cause of mental impairment, which, when present make it impossible to reliably diagnose PD-D

- Cognitive and behavioral symptoms appearing solely in the context of other conditions such as:
  - Acute confusion due to
    - a. Systemic diseases or abnormalities
    - b. Drug intoxication
  - Major Depression according to DSM IV

- Features compatible with “Probable Vascular dementia” criteria according to NINDS-AIREN (dementia in the context of cerebrovascular disease as indicated by focal signs in neurological exam such as hemiparesis, sensory deficits, and evidence of relevant cerebrovascular disease by brain imaging AND a relationship between the two as indicated by the presence of one or more of the following: onset of dementia within 3 months after a recognized stroke, abrupt deterioration in cognitive functions, and fluctuating, stepwise progression of cognitive deficits)
## Defining cognitive impairment, MCI and dementia in PD

<table>
<thead>
<tr>
<th></th>
<th>PD</th>
<th>PD + CI</th>
<th>PD-MCI</th>
<th>PDD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive dysfunction</strong></td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Subjective complaints</strong></td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Functional decline</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>
Outlines

- Cognitive impairment in PD (mild cognitive impairment and dementia)
- Affective disorders in PD (depression and anxiety)
- Psychosis and impulse control disorders in PD
Implications of Depression in PD

- Depression is the strongest predictor of poor quality of life in PD; it can occur many years prior to PD onset.
- Depression is associated with:
  - Faster disease progression and greater reduction in activity of daily living functions.
  - Reduced quality of life of patient and caregiver.
  - Impaired cognitive functioning.
  - Increased mortality.
- Depression may be more disabling than motor symptoms.

The average prevalence were:
Major Depressive D.: 17%
Minor Depressive D.: 22%
Dysthymia : 13%

Clinical relevant depressive symptoms: 36.1%
# Provisional Diagnostic Criteria for Depression in Parkinson’s Disease: Report of an NINDS/NIMH Work Group

Laura Marsh, MD, William M. McDonald, MD, Jeffrey Cummings, MD, Bernard Ravina, MD, and the NINDS/NIMH Work Group on Depression and Parkinson’s Disease

---

**TABLE 2. DSM-IV-TR criteria for major and minor depression**

<table>
<thead>
<tr>
<th>Depressive episode</th>
<th>Criteria</th>
</tr>
</thead>
</table>
| Major depressive episode   | A. Persistence and general pervasiveness of 5 or more of 9 potential symptoms during the same 2-week period that represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure that is present most of the day, nearly every day, as indicated by either subjective report or observation made by others.  
1) Depressed mood  
2) Markedly diminished interest or pleasure in all, or almost all, activities  
3) Loss or gain in weight or appetite  
4) Insomnia or hypersomnia  
5) Psychomotor agitation or retardation  
6) Fatigue or loss of energy  
7) Feelings of worthlessness or excessive or inappropriate guilt  
8) Diminished ability to think or concentrate, or indecisiveness  
9) Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide  
B. Symptoms do not meet criteria for a DSM mixed episode (presence of phenomena of both a manic and a depressed episode).  
C. Symptoms cause clinically significant distress or functional impairment.  
D. Symptoms are not due to the direct physiological effects of a substance or a general medical condition.  
E. Symptoms are not better accounted for by bereavement. |
| Minor depressive episode   | Requires only 2 of the 9 symptoms above, but one must be either depression/sadness or loss of interest/pleasure. |
## Depression Rating Scales in Parkinson’s Disease: Critique and Recommendations

Anette Schrag, MD, PhD\textsuperscript{1,}, Paolo Barone, MD\textsuperscript{2}, Richard G. Brown, PhD\textsuperscript{3}, Albert F.G. Leentjens, MD, PhD\textsuperscript{4}, William M. McDonald, MD\textsuperscript{5}, Sergio Starkstein, MD\textsuperscript{6}, Daniel Weintraub, MD\textsuperscript{7}, Werner Poewe, MD\textsuperscript{8}, Olivier Rascol, MD\textsuperscript{9}, Cristina Sampaio, MD\textsuperscript{10}, Glenn T. Stebbins, PhD\textsuperscript{11}, and Christopher G. Goetz, MD\textsuperscript{11}


<table>
<thead>
<tr>
<th>Scale</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Cutoff score for screening in patients without PD</th>
<th>Cutoff score for screening in patients with PD</th>
<th>Sensitivity to change</th>
<th>Somatic items</th>
<th>Psychological items</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM-D</td>
<td>++</td>
<td>++</td>
<td>13/14</td>
<td>9/10</td>
<td>+</td>
<td>***</td>
<td>**</td>
</tr>
<tr>
<td>MADRS</td>
<td>++</td>
<td>++</td>
<td>6/7</td>
<td>14/15</td>
<td>+</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>BDI</td>
<td>+</td>
<td>+</td>
<td>9/10</td>
<td>13/14</td>
<td>+</td>
<td>**</td>
<td>***</td>
</tr>
<tr>
<td>HADS</td>
<td>+</td>
<td>+/-</td>
<td>7/8</td>
<td>10/11</td>
<td>na</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>SDS</td>
<td>na</td>
<td>na</td>
<td>50/51</td>
<td>na</td>
<td>na</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>GDS 30</td>
<td>++</td>
<td>++</td>
<td>9/10</td>
<td>9/10</td>
<td>na</td>
<td>***</td>
<td>**</td>
</tr>
<tr>
<td>GDS 15</td>
<td>++</td>
<td>++</td>
<td>2/3</td>
<td>4/5</td>
<td>na</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>CSDD</td>
<td>na</td>
<td>na</td>
<td>6/7</td>
<td>na</td>
<td>na</td>
<td>**</td>
<td>***</td>
</tr>
<tr>
<td>CES-D</td>
<td>na</td>
<td>na</td>
<td>15/16</td>
<td>na</td>
<td>na</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>UPDRS part I</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

+/- sensitivity/specificity limited; + some sensitivity/specificity; ++ good sensitivity/specificity; na = not sufficiently assessed in patients with Parkinson’s disease; *<25% of items; **25–50% of items; ***>50% of items
Anxiety in PD

- Up to 40% of PD patients experience anxiety symptoms (GAD, panic attacks etc)\(^1\)-\(^4\)
- Increased anxiety has been associated with motor fluctuations (off periods)\(^3\),\(^4\)
- Similar to depression, anxiety disorders can occur up to 20 years prior to PD onset\(^5\),\(^6\)
- Despite depression, anxiety has received scant attention to date

3. Pontone et al. Mov Disord, 2009
4. Dissanayaka et al. Mov Disord, 2010
5. Gonera et al. Mov Disord, 1997
Outlines

- Cognitive impairment in PD (mild cognitive impairment and dementia)
- Affective disorders in PD (depression and anxiety)
- Psychosis and impulse control disorders in PD
Psychosis in Parkinson’s Disease: Phenomenology, Frequency, Risk Factors, and Current Understanding of Pathophysiologic Mechanisms

By Gilles Fénelon, MD, PhD

FOCUS POINTS

• Approximately one third of patients with Parkinson’s disease report visual hallucinations.
• The more prevalent psychotic symptoms are visual hallucinations and “minor” phenomena such as sense of presence and visual illusions.
• Dopaminergic treatment and psychoactive drugs facilitate the development of psychotic symptoms. Disease-related factors also play an important role, and the main risk factor is the presence of severe cognitive impairment or dementia.
• Although several clinical and biological risk factors have been identified, the pathophysiology of Parkinson’s disease-associated psychosis remains unclear.
Criteria for Diagnosis of Psychosis in PD

**TABLE 1. Proposed Diagnostic Criteria for Parkinson’s Disease-Associated Psychosis**

**A. Characteristic Symptoms**
Presence of at least one of the following symptoms (specify which of the symptoms fulfill the criteria):
- Illusions
- False sense of presence
- Hallucinations
- Delusions

**B. Primary Diagnosis**
UK Brain Bank criteria for Parkinson’s disease

**C. Chronology of the Onset of Symptoms of Psychosis**
Symptoms in Criterion A occur after Parkinson’s onset

**D. Duration**
The symptom(s) in Criterion A are recurrent or continuous for 1 month

**E. Exclusion of Other Causes**
The symptoms in Criterion A are not better accounted for by another cause of Parkinsonism such as dementia with Lewy bodies, psychiatric disorders such as schizophrenia, schizoaffective disorder, delusional disorder, mood disorder with psychotic features, or a general medical condition including delirium

**F. Associated Features: (Specify if Associated)**
- With/without insight
- With/without dementia
- With/without treatment for Parkinson’s disease (specify drug, surgical, other)

---

## Prevalence of Hallucinations in Parkinson’s Disease in Cross-Sectional Prospective Studies

<table>
<thead>
<tr>
<th>Authors (Year)</th>
<th>n</th>
<th>Total prevalence</th>
<th>Complex visual hallucinations</th>
<th>Minor hallucinations/illusions</th>
<th>Auditory hallucinations</th>
<th>Delusions</th>
<th>Study period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanchez-Ramos et al (1996)</td>
<td>214*</td>
<td>26</td>
<td>26</td>
<td>–</td>
<td>0</td>
<td>–</td>
<td>Not disclosed</td>
</tr>
<tr>
<td>Graham et al (1997)</td>
<td>129*</td>
<td>25</td>
<td>23</td>
<td>–</td>
<td>12</td>
<td>7</td>
<td>Past and present</td>
</tr>
<tr>
<td>Inzelberg et al (1998)</td>
<td>121*</td>
<td>37</td>
<td>37</td>
<td>–</td>
<td>8</td>
<td>–</td>
<td>Past and present</td>
</tr>
<tr>
<td>Bailbé et al (2002)</td>
<td>152†</td>
<td>23</td>
<td>21</td>
<td>–</td>
<td>6</td>
<td>7</td>
<td>Past 15 days</td>
</tr>
<tr>
<td>Aarsland et al (1999)</td>
<td>235‡</td>
<td>16</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Past week</td>
</tr>
<tr>
<td>Schrag et al (2002)</td>
<td>124‡</td>
<td>23</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Past and present</td>
</tr>
<tr>
<td>Pacchetti et al (2005)</td>
<td>289*</td>
<td>30</td>
<td>30</td>
<td>17</td>
<td>6</td>
<td>7</td>
<td>Past 6 months</td>
</tr>
<tr>
<td>Williams et al (2007)</td>
<td>115*</td>
<td>75</td>
<td>38</td>
<td>72</td>
<td>22</td>
<td>–</td>
<td>Past 3 months</td>
</tr>
</tbody>
</table>

Values are expressed as percentages. All studies used a questionnaire on hallucinations, with the exception of Aarsland et al who used section I of the Unified Parkinson’s Disease Rating Scale.

*Patients from movement disorders clinics; †Patients from hospitals or private clinics; ‡Population-based study.
# Scales to Assess Psychosis in Parkinson’s Disease: Critique and Recommendations

Hubert H. Fernandez, MD,† Dag Aarsland, MD, Gilles Fénelon, MD, Joseph H. Friedman, MD, Laura Marsh, MD, Alexander I. Tröster, PhD, Werner Poewe, MD, Olivier Rascol, MD, Cristina Sampaio, MD, Glenn T. Stebbins, PhD, and Christopher G. Goetz, MD

*Movement Disorders*  
Vol. 23, No. 4, 2008, pp. 484–500

## TABLE 4. Summary of “use recommendations” of psychosis scales used in PD

<table>
<thead>
<tr>
<th>Psychosis scale</th>
<th>Applied in PD</th>
<th>Used in studies beyond original article</th>
<th>Satisfactory clinimetric assessment</th>
<th>Scale designation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parkinson psychosis rating scale</td>
<td></td>
<td></td>
<td>√</td>
<td>Suggested</td>
</tr>
<tr>
<td>Parkinson psychosis questionnaire</td>
<td></td>
<td></td>
<td>√</td>
<td>Suggested</td>
</tr>
<tr>
<td>Rush hallucination inventory</td>
<td></td>
<td></td>
<td>√</td>
<td>Listed</td>
</tr>
<tr>
<td>Baylor hallucination questionnaire</td>
<td></td>
<td></td>
<td>√</td>
<td>Listed</td>
</tr>
<tr>
<td><strong>Neuropsychiatric inventory</strong></td>
<td></td>
<td></td>
<td>√</td>
<td>Recommended</td>
</tr>
<tr>
<td>Behavioral pathology in Alzheimer’s disease rating scale</td>
<td></td>
<td></td>
<td>√</td>
<td>Suggested</td>
</tr>
<tr>
<td><strong>Brief psychiatric rating scale</strong></td>
<td></td>
<td></td>
<td>√</td>
<td>Recommended</td>
</tr>
<tr>
<td>Positive and negative syndrome scale</td>
<td></td>
<td></td>
<td>√</td>
<td>Recommended</td>
</tr>
<tr>
<td>Schedule for assessment of positive symptoms</td>
<td></td>
<td></td>
<td>√</td>
<td>Recommended</td>
</tr>
<tr>
<td>Nurses’ observation scale for inpatient evaluation</td>
<td></td>
<td></td>
<td>√</td>
<td>Listed</td>
</tr>
<tr>
<td>Clinical global impression scale</td>
<td></td>
<td></td>
<td>√</td>
<td>Suggested</td>
</tr>
<tr>
<td>Unified Parkinson disease rating scale Part I</td>
<td></td>
<td></td>
<td>√</td>
<td>Listed</td>
</tr>
</tbody>
</table>
Impulse Control Disorders (ICDs)

- ICDs include pathological gambling, compulsive shopping and eating, sexual preoccupations, punding and medication abuse [Voon, 2007]. These behavioral disorders are usually problematic for patient and caregiver, but because they are often embarrassing, medical staff should pose focused questions regarding their presence.

- ICDs appear to be more common in treated PD patients than in the general population.

- The overall prevalence of these behaviors appears to be 13.6% of treated PD patients [Weintraub, DOMINION study, 2010].

- 0.7-7.2% in patients with levodopa treatment alone; 13.5-14.0% in patients with dopamine agonists treatment [Voon, 2007; Weintraub, 2010].

- ICDs are associated with younger age and depend on gender [Singh et al, 2007; Voon et al, 2007].
Panel 2: Dopaminergic medication-related compulsive behaviours

**Gambling**

Pathological gambling (DSM IV definition)²

A Persistent and recurrent maladaptive gambling behaviour as indicated by five or more of the following:
1. Preoccupied about gambling
2. Increasing amount of money spent
3. Repeated unsuccessful attempt to control gambling
4. Restless or irritable when reducing time spent on gambling
5. Means of escape from problems or to relieve dysphoric mood
6. Chasing losses
7. Lies to others about gambling
8. Illegal acts to finance gambling
9. Jeopardised relationship, work, or education
10. Relies on others for money

B Does not occur exclusively during periods of hypomania or mania

**Problem gambling**

Similar to pathological gambling but is indicated by only three to four of the ten criteria

**Hypersexuality**

Proposed operational diagnostic criteria¹

A The sexual thoughts or behaviours are excessive or an atypical change from baseline indicated by one or more of the following:
1. Maladaptive preoccupation with sexual thoughts
2. Inappropriately or excessively requesting sex from spouse or partner
3. Habitual promiscuity
4. Compulsive masturbation
5. Use of telephone sex, lines or pornography
6. Paraphilias

B The behaviour must have persisted for at least 1 month

C The behaviour causes at least one or more of the following:
1. Visible distress
2. Attempts to control thoughts or behaviour unsuccessful or result in marked anxiety or distress
3. Behaviours are time-consuming
4. Interferes substantially with social or occupational functioning

D The behaviour does not occur exclusively during periods of hypomania or mania

E If all criteria except C are fulfilled, the disorder is subsyndromal

**Compulsive shopping**

McElroy's criteria²

A Maladaptive preoccupation with buying or shopping, whether impulses or behaviour, that:
1. Are experienced as irresistible, intrusive, and/or senseless
2. Result in frequent buying of more than can be afforded, items that are not needed, or for longer periods of time than intended

B Causes visible distress, is time-consuming, substantially interferes with social or occupational functioning, or results in financial problems

C The behaviours do not occur exclusively during periods of hypomania or mania

Diagnosis of ICD

Compulsive eating

Binge eating (DSM IV research diagnostic criteria)²

A Recurrent binge eating characterised by eating large amounts in a discrete period along with a loss of control

B Three of more of the following:
1. Rapid eating
2. Feeling uncomfortably full
3. Eating large amounts when not hungry
4. Eating alone because of embarrassment of amounts
5. Feeling disgusted or guilty after overeating

C Visible distress

D Occurs 2 days per week for 6 months

E Does not occur with compensatory behaviours or during anorexia or bulimia nervosa

**Punding**¹

- An intense fascination with complex, excessive, repetitive, non-goal-oriented behaviours
- The behaviours include less complex acts such as shuffling papers, reordering bricks, or sorting handbags, or more complex acts such as hobbyism (gardening, painting), writing, or excessive computer use

Compulsive medication use

Giovanetti's criteria²

A Clinical diagnosis of levodopa-responsive Parkinson's disease

B Need for increasing dopamine replacement therapy in excess of that required for motor signs and symptoms

C Pathological use despite severe behavioural disturbances and drug-induced dyskinesias

D Social or occupational impairment

E Development of a dopaminergic withdrawal state with dose reduction

(Continues from previous page)
Validation of the Questionnaire for Impulsive-Compulsive Disorders in Parkinson’s Disease (QUIP)

Daniel Weintraub, MD1,2,3,4, Staci Stewart, BA1, Judy A. Shea, PhD5,6, Kelly E. Lyons, PhD7, Rajesh Pahwa, MD7, Erika D. Driver-Dunckley, MD8, Charles H. Adler, MD, PhD8, Marc N. Potenza, MD, PhD8, Janis Miyasaki, MD, MEd, FRCP10, Andrew D. Siderowf, MD, MSCE2, John E. Duda, MD2,3, Howard I. Hurtig, M.D.2, Amy Colcher, MD2, Stacy S. Horn, DO2, Matthew B. Stern, MD2,3, and Valerie Voon, MD11

Mov Disord. 2009 July 30; 24(10): 1461–1467.

Answer ALL QUESTIONS based on CURRENT BEHAVIORS LASTING AT LEAST 4 WEEKS

A. GAMBLING
1. Do you or others think you have an issue with too much gambling behaviors (such as casinos, internet gambling, lotteries, scratch tickets, betting, or slot or poker machines)? ___Yes ___No

2. Do you have difficulty controlling your gambling behaviors (such as increasing them over time, or having trouble cutting down or stopping them)? ___Yes ___No

B. SEX
1. Do you or others think you have an issue with too much sex behaviors (such as making sexual demands on others, promiscuity, prostitution, change in sexual orientation, masturbation, internet or telephone sexual activities, or pornography)? ___Yes ___No

2. Do you think too much about sex behaviors (such as having trouble keeping thoughts out of your mind or feeling guilty)? ___Yes ___No

C. BUYING
1. Do you or others think you have an issue with too much buying behaviors (such as too much of the same thing or things that you don’t need or use)? ___Yes ___No

2. Do you engage in activities specifically to continue the buying behaviors (such as hiding what you’re doing, lying, hoarding things, borrowing from others, accumulating debt, stealing, or being involved in illegal acts)? ___Yes ___No

D. EATING
1. Do you or others think you have an issue with too much eating behaviors (such as eating larger amounts or different types of food than in the past, more rapidly than normal, until feeling uncomfortably full, or when not hungry)? ___Yes ___No

2. Do you have urges or desires for eating behaviors that you feel are excessive or cause you distress (including becoming restless or irritable when unable to participate in the behavior)? ___Yes ___No

E. OTHER BEHAVIORS
Do you or others think that you spend too much time…

1. On specific tasks, hobbies or other organized activities (such as writing, painting, gardening, repairing or dismantling things, collecting, computer use, working on projects, etc.)? ___Yes ___No

2. Repeating certain simple motor activities (such as cleaning, tidying, handling, examining, sorting, ordering, or arranging objects, etc.)? ___Yes ___No

3. Walking or driving with no intended goal or specific purpose? ___Yes ___No

F. MEDICATION USE
1. Do you or others (including your physicians) think that you consistently take too much of your Parkinson’s medications? ___Yes ___No

2. Do you have difficulty controlling your use of Parkinson’s medications (such as experiencing a strong desire for more medication, or having worse mood or feeling unmotivated at a lower dosage)? ___Yes ___No

QUIP-CURRENT-SHORT
Figure 2. Factors associated with medication-related repetitive behaviors. PD indicates Parkinson disease. *Associated with all behaviors except dopamine agonists not associated with compulsive medication use. †Can be but not necessarily associated with pathological gambling, hypersexuality, and compulsive shopping; associated with punding and compulsive medication use but may be confounded by excessive use of medications. ‡Male sex associated with hypersexuality. §Associated with pathological gambling. ¶Associated with compulsive medication use. ‖Possible association with pathological gambling and hypersexuality.

(From Voon & Fox, 2007)
Conclusions

• Cumulative prevalence of most psychiatric disorders in PD is much higher than previously thought
• Nonmotors mental symptoms of PD are associated with greater disability, poorer quality of life and caregiver burden
• Most psychiatric disturbances in PD are associated with worse motor progression and cognitive impairment
• The neural substrate of neuropsychiatric symptoms is a complex interaction of deficits in several neurotransmitters and neural networks, pathological changes and genetic factors
• PD treatment has a complex and varied effect on psychiatric symptoms, in some cases being an etiological factor and in others representing a treatment option