

The PD You Don't See: Cognitive Symptoms

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Non-motor symptoms of Parkinson's

- Cognitive (thinking) problems
- Impulse control problems
- Depression and anxiety
- Apathy
- Hallucinations
- Sleep disorder
- Pain

Objectives

- To understand why cognitive changes occur in a “motor” disease
- To identify common cognitive changes in Parkinson's
- To understand how these changes affect day-to-day functioning
- To learn techniques for managing these challenges

Why?

What is causing the cognitive problems in Parkinson's?

Cognitive problems are common but often manageable

- **~95% will experience some change in thinking** (Pirozzolo et al., 1982, Bassett 2005)
- **~80-85% will show no progression in thinking problems up to 5 years after diagnosis** (Williams-Gray et al., 2009)
- **~25-30% will develop dementia over the course of their lives** (Aarsland et al., 2005)

What Exactly is Dementia?

- Problems in thinking that are severe enough to interfere with the ability to carry out day-to-day tasks
- There are many different causes of dementia
- Parkinson's is one
- Dementia may be related to disruption of cholinergic system rather than dopaminergic system

Why does Parkinson's cause cognitive decline?

- Genetic factors disrupt areas of the brain important for thinking
- Dopamine replacement medications affect thinking
- Age makes people more vulnerable to cognitive decline
- Reduction in important brain chemicals (dopamine, acetylcholine) interferes with thinking

What?

What kinds of thinking problems are common in Parkinson's?

Common cognitive problems in Parkinson's

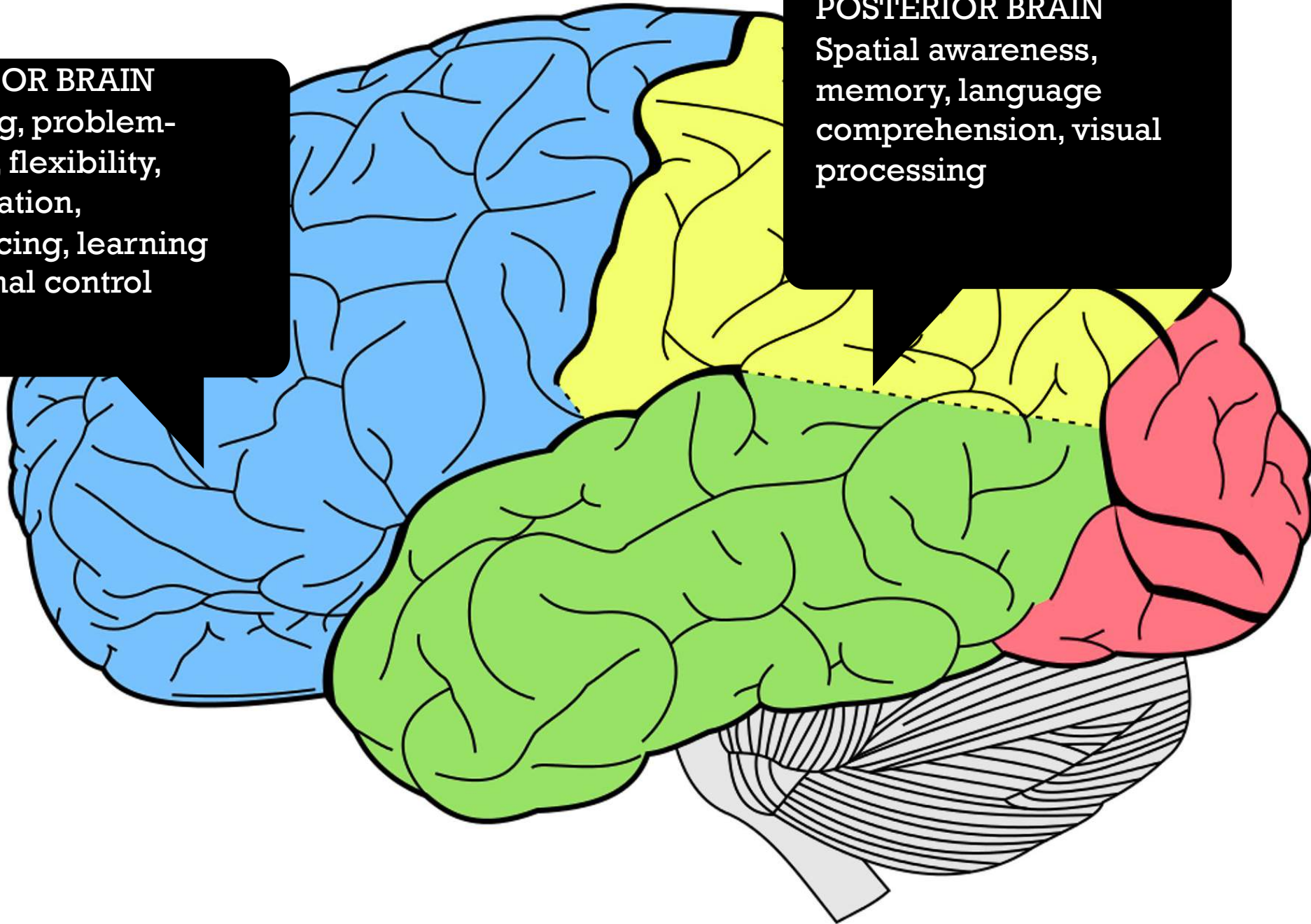
- Executive dysfunction
- Fluctuations in attention and focus
- Difficulty learning new material
- Visual perception problems

ANTERIOR BRAIN

Planning, problem-solving, flexibility, organization, sequencing, learning, emotional control

POSTERIOR BRAIN

Spatial awareness, memory, language comprehension, visual processing



Frontal (Executive) Functions

- Alter behavior based on feedback from the environment
- Initiate and motivate
- Difficulty with problem solving
- Plan and organize
- Make decisions
- Retrieve information
- Learn



More about executive dysfunction

- Caused by chemical changes in the frontal lobe circuit
- Occurs early in the course of Parkinson's
- Caused by dopaminergic changes in frontal lobe
- May not get progressively worse
- Not associated with development of dementia (Williams-Gray et al., 2009)

Effects of dopamine medicine on executive functions

- Improves working memory, planning and sequencing
- May impact attention and learning
- Overstimulates reward system resulting in impulse control problems
- Can overstimulate areas of the brain associated with hallucinations.

Posterior Functions

- Visual perception
- Copying
- Motion perception
- Language comprehension
- Memory



Why the focus on visuospatial skills?

- Increase risk of falls
- Increase risk of driving problems
- Associated with development of visual hallucinations
- Predictor of development of severe cognitive decline
- Related to acetylcholine not dopamine

How?

How do these problems appear in real life?

Difficulty solving problems and changing strategies

- Take a break, get advice, ask for help

Problems with planning and sequencing steps

- Start early, make a list, finish one step to completion

Disorganization

- Reduce clutter, hire someone to help set up system

Losing train of thought

- Avoid multitasking, keep it simple, do not interrupt

Fluctuations in alertness

- ID best times, nap, discuss med list with physician

Frustration with care partner due to forgetfulness

- State, rephrase, repeat, write it down

Forgetfulness for instructions, lists, appointments

- Rely on to-do lists, calendars, “Smartphone” reminders

Visual hallucinations and misidentifications

- Reduce shadows, reduce mirrors, talk to physician

Bumping into furniture, tripping down stairs, failing to navigate distances

- Mark stairs, use assistive devices, rehab balance

Beating the Challenges

Share the challenges that you are having with someone you trust

Managing Cognitive Problems Daily

- Limit distractions
- Maintain a consistent schedule
- Simplify tasks into single steps
- Remind others to slow down
- ID “best times” of the day
- Reduce stress



Cognitive Rehabilitation

- Computer-based attention and working memory training tests have benefit for individuals with mild problems in these areas (Cerasa, 2014).
- Cognitive rehab can improve working memory, executive functioning and processing speed (Petrelli, 2015, Leung et al., 2015)
- Goal-oriented cognitive rehabilitation potentially helpful

Physical Exercise

- Four-weeks of treadmill training improved executive functions as well as gait and mood (Picelli, 2016).
- Aerobic and anabolic exercise improved executive functions (Reynolds et al., 2016, Uc et al., 2014).
- Consider exercises that link mental and physical attention
 - Noncontact boxing
 - Yoga
 - Tai Chi

Action Steps

1. Recognize non-motor signs and speak to your movement disorders specialist about them
2. Incorporate more routine and structure into your life
3. Recognize the importance of rest and exercise
4. Regularly review medication lists with your pharmacist to identify potentially dangerous interactions