

# Cognition, Depression, and Anxiety, and How to Manage Them

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# Disclosures

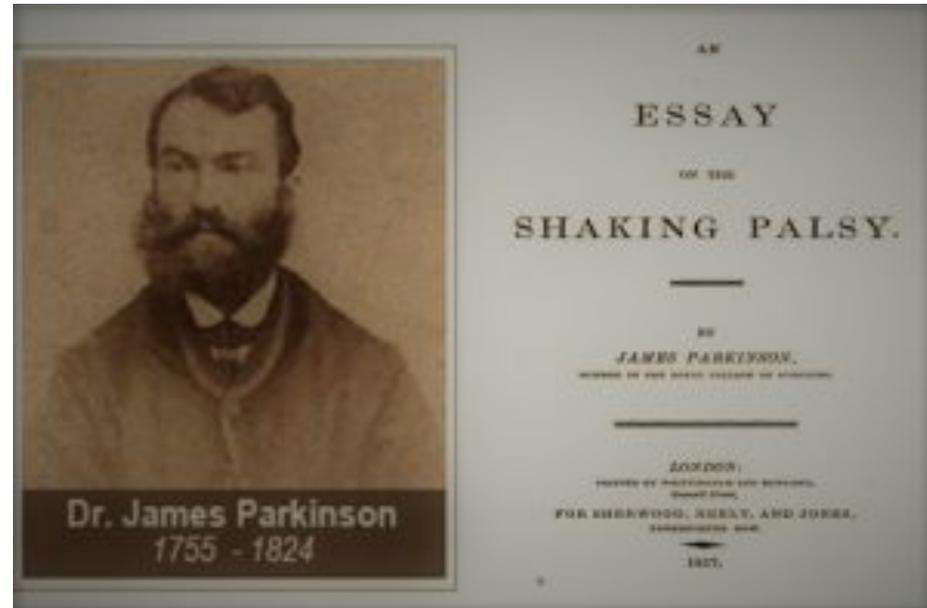


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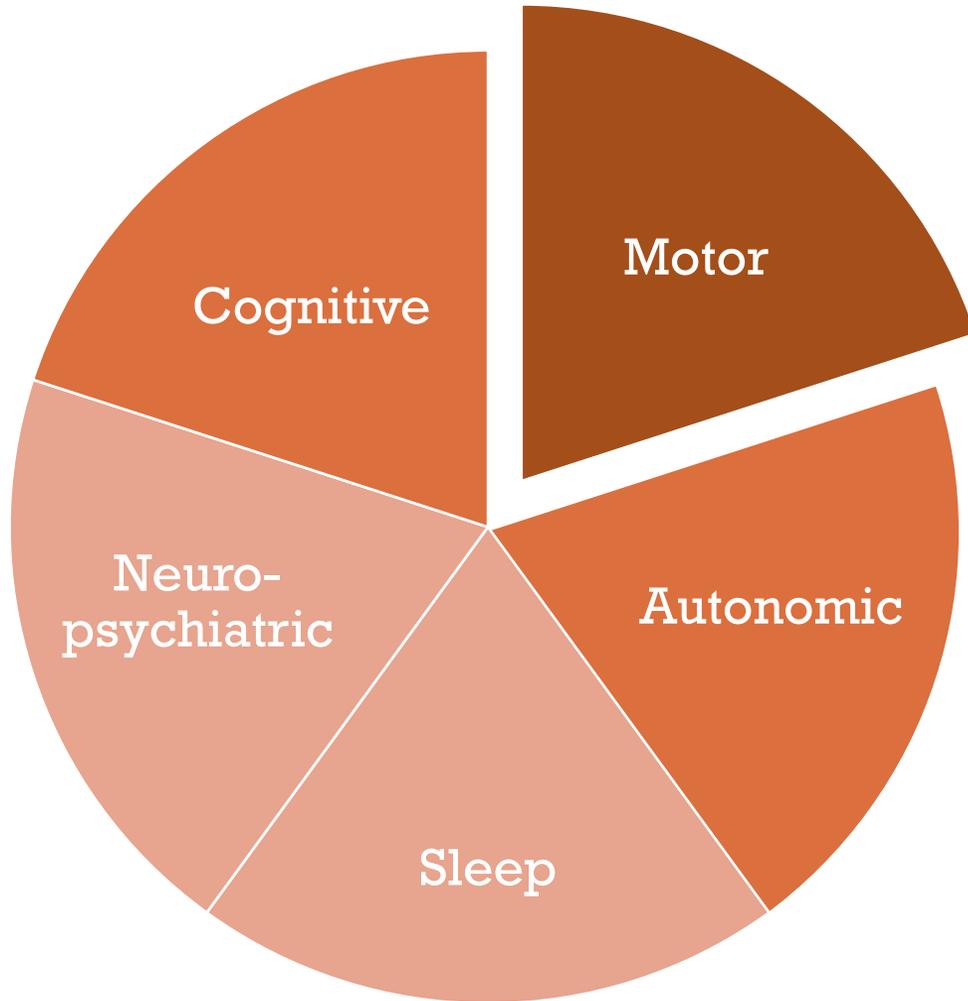
# In The Beginning



- Tremor
- Rigidity
- Bradykinesia
- Gait and balance problems



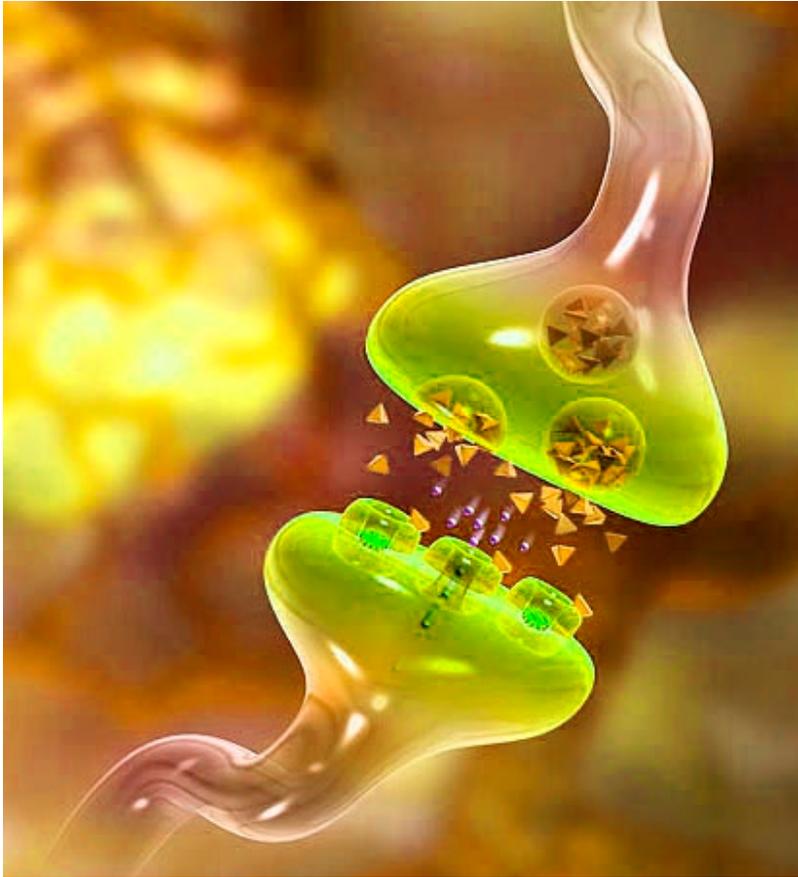
# Recognition of Non-Motor Features



Symptom	% of PD patients
Olfactory dysfunction	90%
Dementia	78%
Depression	40-50%
Autonomic dysfunction	80%
Orthostatic hypotension	50%
GI symptoms	50-95%
Urogenital dysfunction	57-83%
Pain	40-50%
Sleep disorders	66%
Fatigue	50%

Chaudhuri et al, Lancet Neur 2006

# From Neurons to Behavior



## Neurons

- Workhorses of the brain
- Communicate using chemicals including dopamine

# From Neurons to Behavior

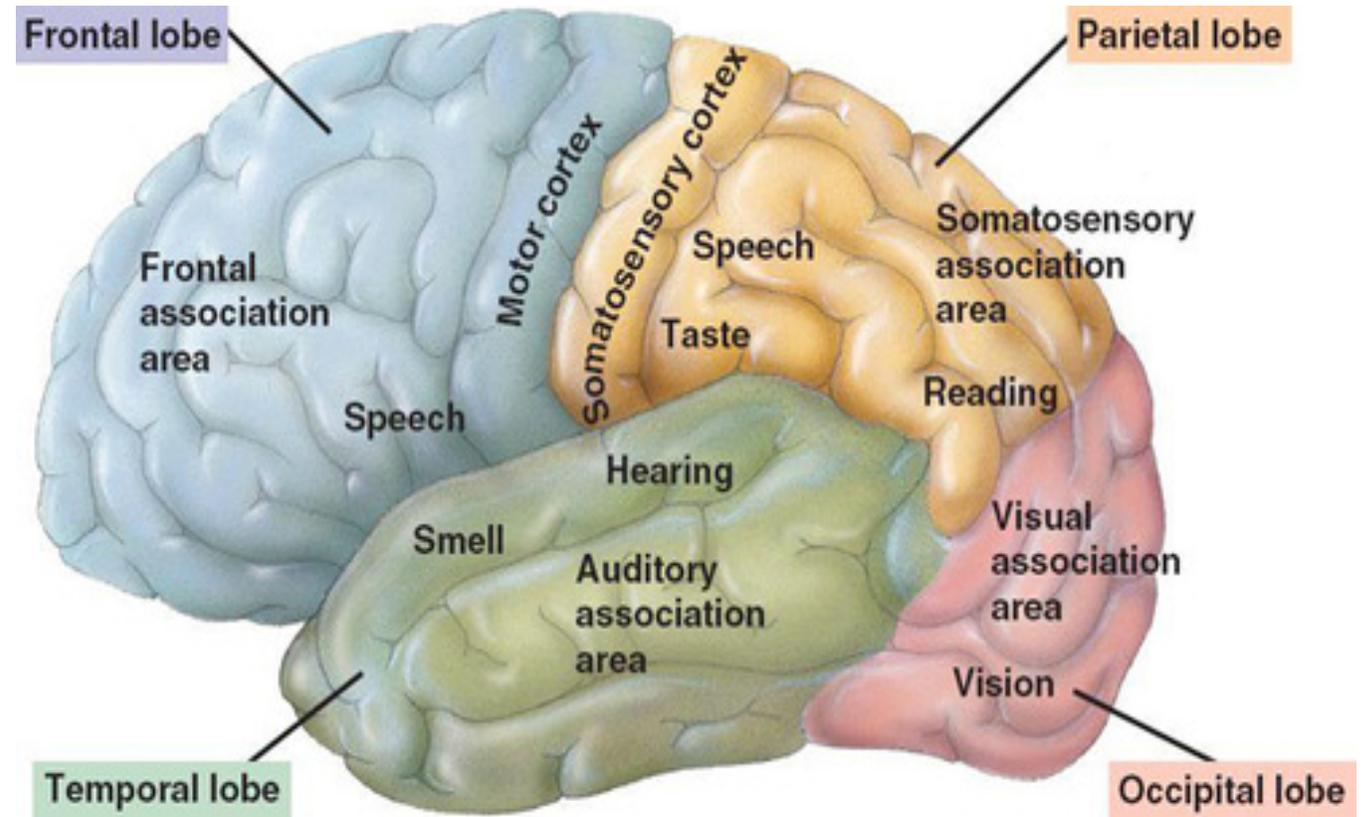


## Neurons

- Connected in large networks
- Networks operate in different parts of the brain

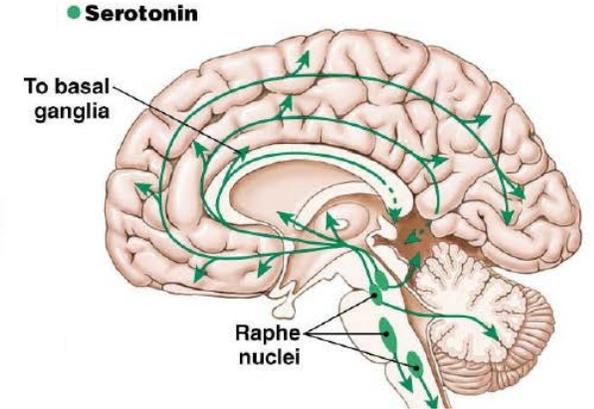
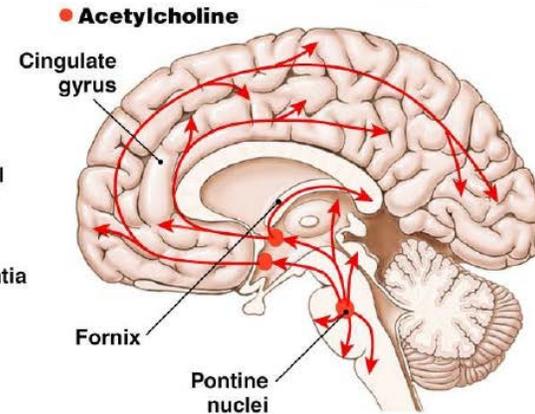
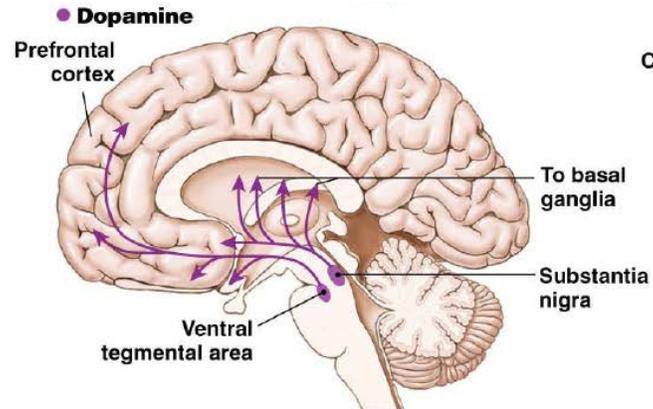
# From Neurons to Behavior

- Different parts of the brain are responsible for different behaviors

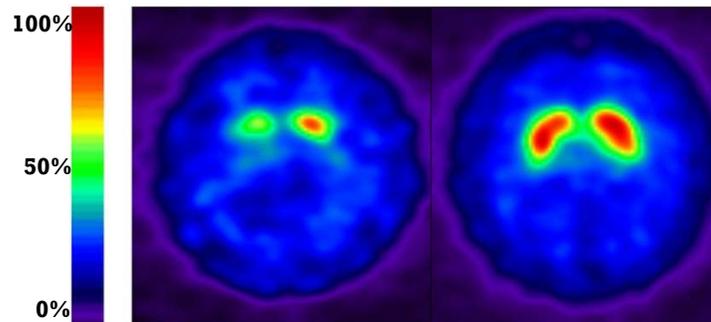


# What Causes Non-Motor Symptoms?

- Cells that produce dopamine and die off

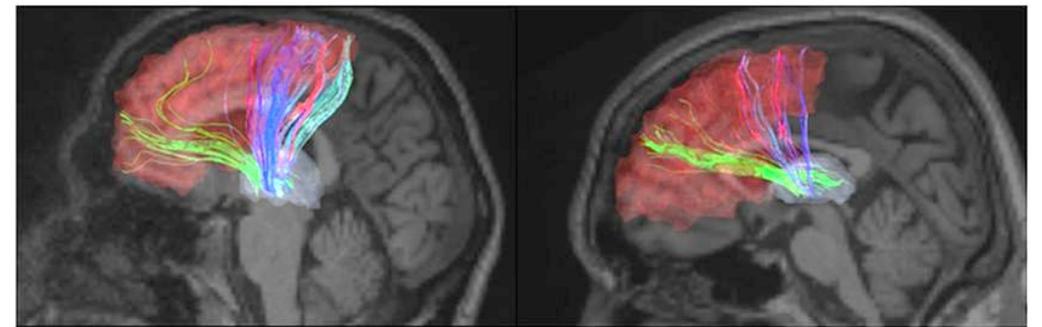


- Many areas of the brain are affected



PD

Non-PD



PD

Non-PD

Son & Park, Scientific Reports 2016

# Pre-Motor Symptoms

- Increasingly recognized pre-clinical phase
- Can occur years to decades before motor symptoms
- **Characterized by:**
  - Loss of sense of smell
  - REM behavior disorder
  - Excessive sleepiness
  - Mood disorders
  - Constipation



# Impact of Non-Motor Symptoms

- Very common; affecting majority of patients (>90%)
- Typically less predominant in early disease, but increase with disease duration
- Non-motor symptoms have a great impact on quality of life
- Source of significant caregiver burden
- May impact relationships and finances (ICD)
- Greatest risk factors for assisted living are dementia or neuropsychiatric features

# Depression

- **Very common in Parkinson's (up to 50%)**
- **Depression**
  - **Feelings of sadness lasting at least two weeks**
    - Changes in sleep or appetite
    - Decreased concentration or attention
    - Increased fatigue
    - Feeling “slowed down” or restless
    - Feeling worthless or guilty
    - Suicide ideas or a wish for death
  - **More predictive of distress than motor disability**
  - **More frequent in males and those with prior episodes or family history**

# Depression (cont)

- Cause may be multi factorial
  - Psychological factors
    - Coping with chronic illness, isolation, early retirement, restriction of activities
  - Biological
    - Neurochemical: dopamine, serotonin, norepinephrine
- Challenges
  - Some people may not report mood changes
  - Some people have difficulty recognizing changes in mood state
  - Hard to distinguish depression symptoms from motor symptoms

# Anxiety

- Anxiety
  - Feelings of tension or worry lasting six months
    - Decreased concentration or attention
    - Feeling overwhelmed
    - Concentration problems
    - Irritability
    - Poor sleep
- Can be experienced as
  - Generalized anxiety
  - Anxiety attacks
  - Obsessive-compulsive disorder
  - Social avoidance

# Anxiety (cont)

- Cause may be multi factorial
  - Psychological factors
    - Coping with chronic illness, isolation, early retirement, restriction of activities
  - Biological
    - Neurochemical: serotonin, norepinephrine, dopamine
- Challenges
  - Worry about symptoms may not be true anxiety
  - Legitimate concerns about physical risks (falls)
  - Motor symptoms may be mistaken for anxiety

# Impulse Control

- **Impulse Control Disorders**
  - Difficulty controlling impulses
  - Hypersexuality
  - Binge eating
  - Compulsive behaviors: Shopping/gambling
  - Acting without thinking
- Most commonly seen during treatment with specific drugs
- May be similar in presentation to OCD or addictive behavior
- Upsetting to patients and families
- May lead to damage to relationship and/or finances

# Hallucinations

- Perceiving something that isn't really there
  - Seeing, hearing, touch (occasionally)
  - Stress-related
  - May occur in low light conditions
  - Fleeting and non-disturbing
- Can often be treated
  - Side effect of some medications
  - 25% taking Parkinson's medications may experience hallucinations
  - Inform your doctor!

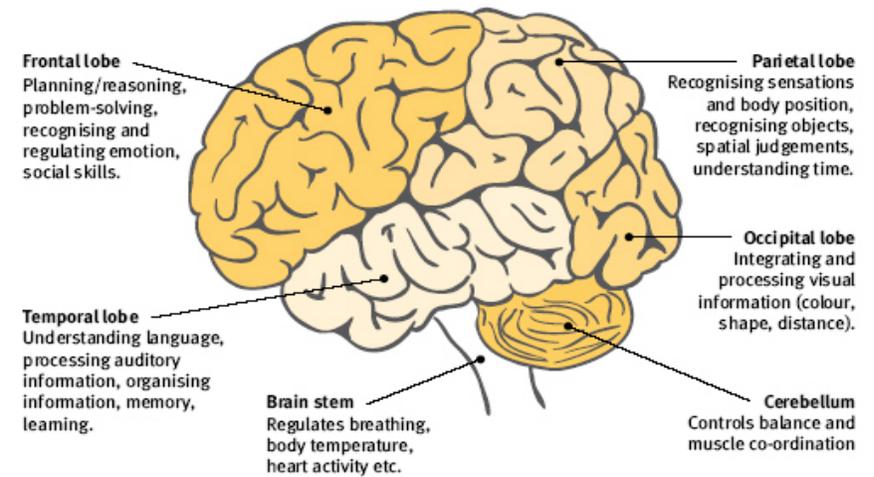


# Cognitive Symptoms

- Cognitive changes are very common (>70%)
- Dementia affects ~25% of all people with Parkinson's
- Cognitive changes are related to slow information transfer
- Memory loss, word-finding are most troubling to patients and caregivers

- **Cognitive Domains**

- Attention and Processing Speed
- Executive Dysfunction
- Language
- Memory
- Visuoperception



# Attention and Processing Speed

- Main problem is an overall slowing of information transfer in brain areas supporting cognition
- Bradyphrenia is cognitive equivalent of bradykinesia
  - Delay in responding to verbal or other stimuli
  - Take longer to complete tasks
- Difficulty sustaining attention over long periods of time
- Can be mistaken for depression

# Executive Function

- **Problems planning and completing multi-step tasks**
  - Difficulties generating, maintaining, shifting, and blending different ideas and concepts
- **Difficulties with problem-solving**
  - Takes longer and may lead to feelings of being overwhelmed
- **May show impaired judgment or impulse control**
- **May have difficulty initiating new tasks or behaviors**
- **Caused by reduced neurotransmitters to frontal lobes of the brain and overall slowed information transfer**

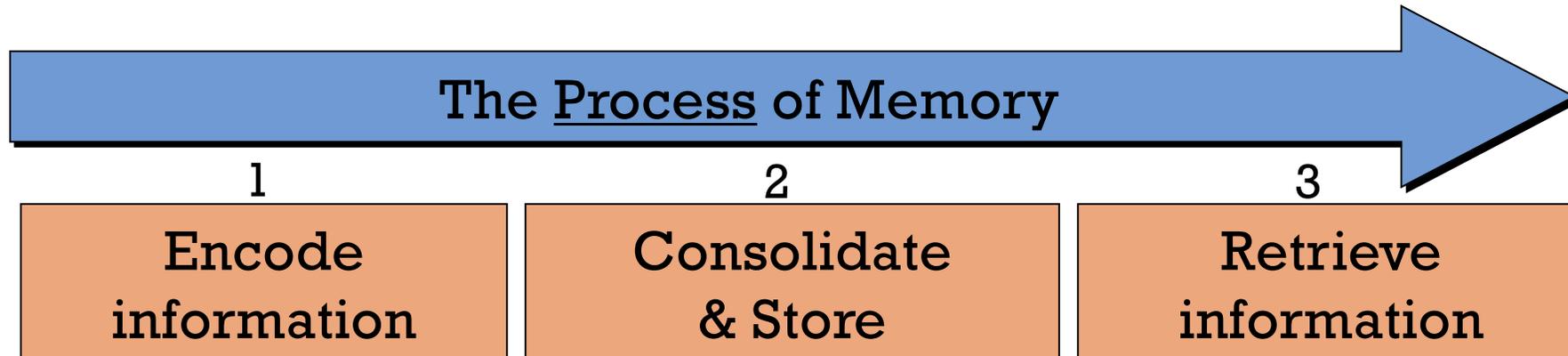
# Language and Visuoception

- Language
  - Most reported difficulty is word retrieval
    - “Tip-of-the-tongue”
    - Likely due to slowed processing speed
    - Will be more noticeable in individuals with lower vocabulary skills
    - Also tend to use simpler speech and speak less overall
- Visuoception
- Poor depth perception and navigation
  - Driving can become unsafe



# Memory

- Roughly half of people with Parkinson's report memory changes
- Due to poor encoding and retrieval, not retention
- Different pattern than Alzheimer's disease
- Benefit from cueing
- Retentive memory loss in Parkinson's may indicate dementia



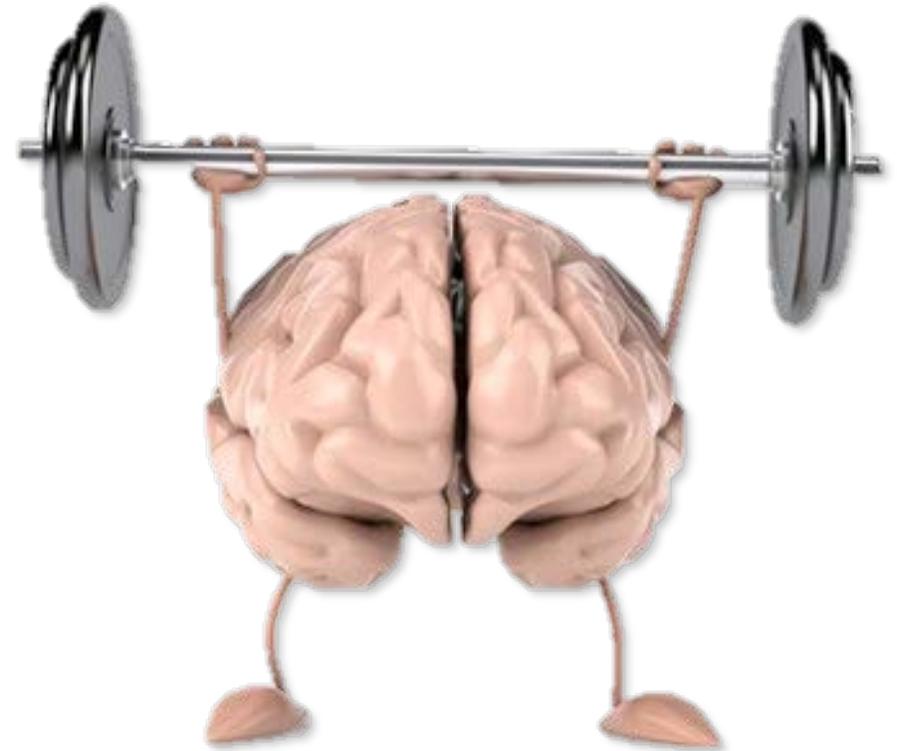
# Parkinson's Dementia

- More severe cognitive changes
- Cognitive changes affect ability to do daily tasks
- Generally include significant memory loss
- Usually occurs late in disease
- May affect 25-50% of people with Parkinson's
- Not all patients develop dementia



# What Can You Do?

- Brain Fitness Strategies
  - Medications
  - Stress reduction
  - Physical activity
  - Other lifestyle choices
  - Diet
  - Mental activity



# **Mental Activity**

- Accelerates the rate new brain cells are created
- Enhances the chances of new neurons' survival
- Strengthens the synapses (connections) among neurons
- Leisure activity involving mental effort decreases risk for dementia

# Mental Activity

- The 3 key principles for good brain exercise
  - Novelty
  - Variety
  - Challenge



# Mental Activity

- Any kind of mentally challenging activity could be protective
  - Crosswords
  - Social interactions
  - Learning language(s) (reading)
  - Listening to music
  - Card games
  - Chess and strategy games
  - Visit museums and historical sites
  - Attend workshops



# Mental Activity

- Try to learn something new every day:
  - a new concept
  - a new word
  - a new exercise
  - engage with people
  - use your brain instead of a device



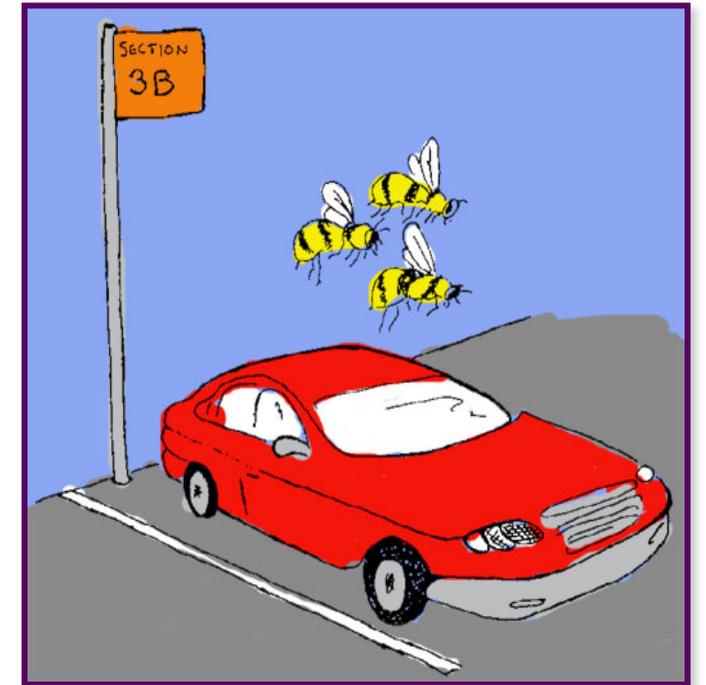
# Tips To Strengthen Your Memory

- It's easier to remember things you have practiced!
- The more a memory is activated, the stronger the memory becomes
- Poor input of memories makes retrieval of memories more difficult
- Reduce distractions when trying to create new memories
- Use memory strategies
  - Chunking, rhyming, music, linking



# Remembering New Information

- **Attend**
  - Actively pay attention and reduce distractions
  - Focus on what you are doing
- **Visualize**
  - Create a vivid mental image
  - The more outrageous the better
- **Connect**
  - Link images to create a memorable scene



# Remembering Names

- Commit yourself to learning the name
- Repeat name during conversation
- Comment if person reminds you of someone you know
- Ask the name's spelling or pronunciation
- Use the name when you say good-bye



# Recommendations for Care Partners

- Written notes and lists are helpful,
  - ...but only if you orient to them
  - Put them in a prominent place in the home
- Use prompts and cues if possible
  - “Did Linda call?”
- Keep things in routine places
- Elaborate on information
- Allow time to come up with words or information



# Take Home Points

- If you have non-motor symptoms, ask your doctor to evaluate them and report their impact on your quality of life
- Recognize that care partner stress is related to severity of non-motor symptoms
- Most cognitive symptoms are related to slowing of information processing, similar to motor symptoms
- Keep your brain active with novelty, variety, challenge
- Focus on learning something new every day
- Commit to remembering and use cues and strategies

**Thank you for your attention!**