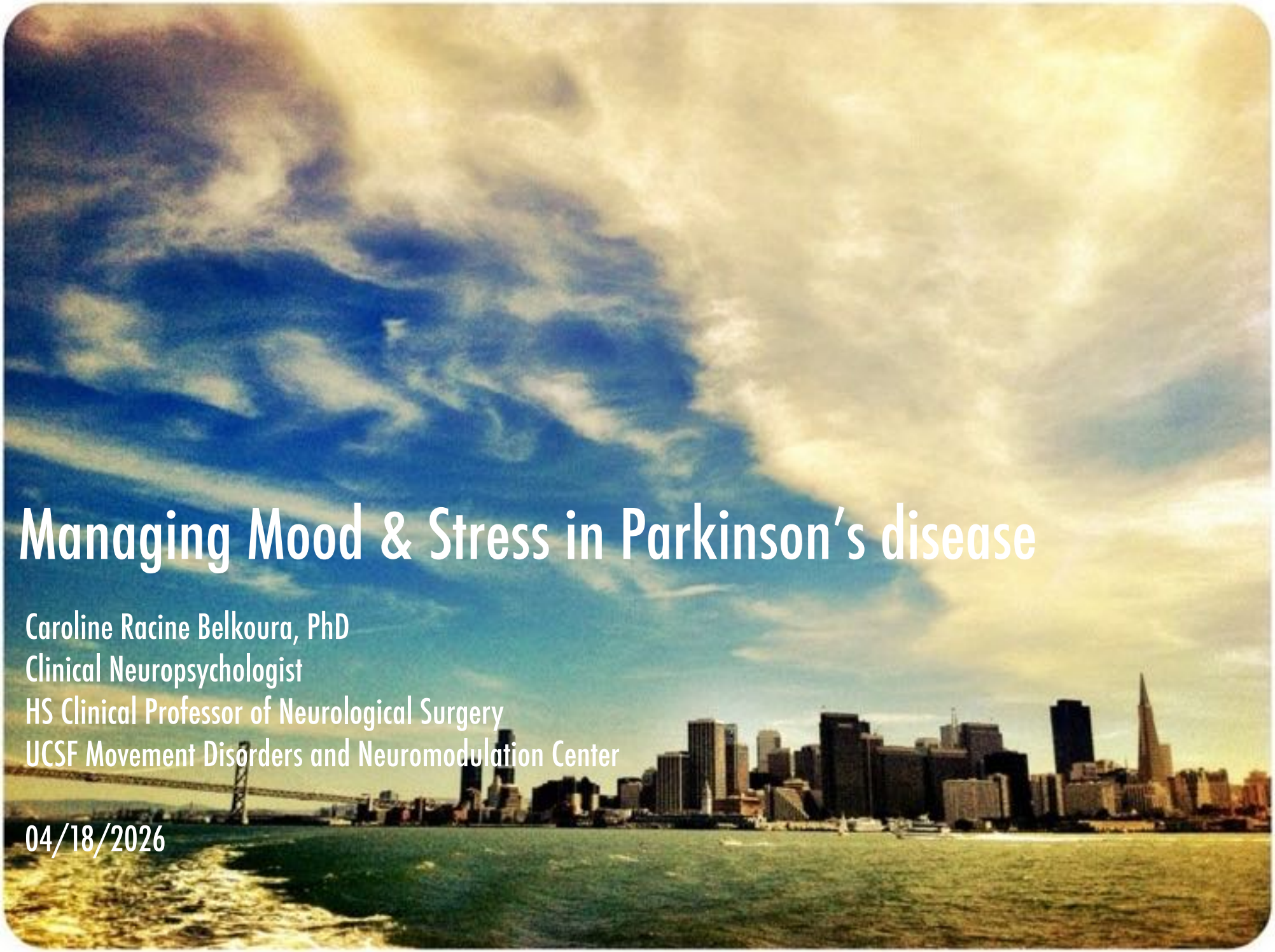

Managing Mood & Stress in Parkinson's disease

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Clinical Neuropsychologist
HS Clinical Professor of Neurological Surgery
UCSF Movement Disorders and Neuromodulation Center

04/18/2026

PD - not just a motor disorder

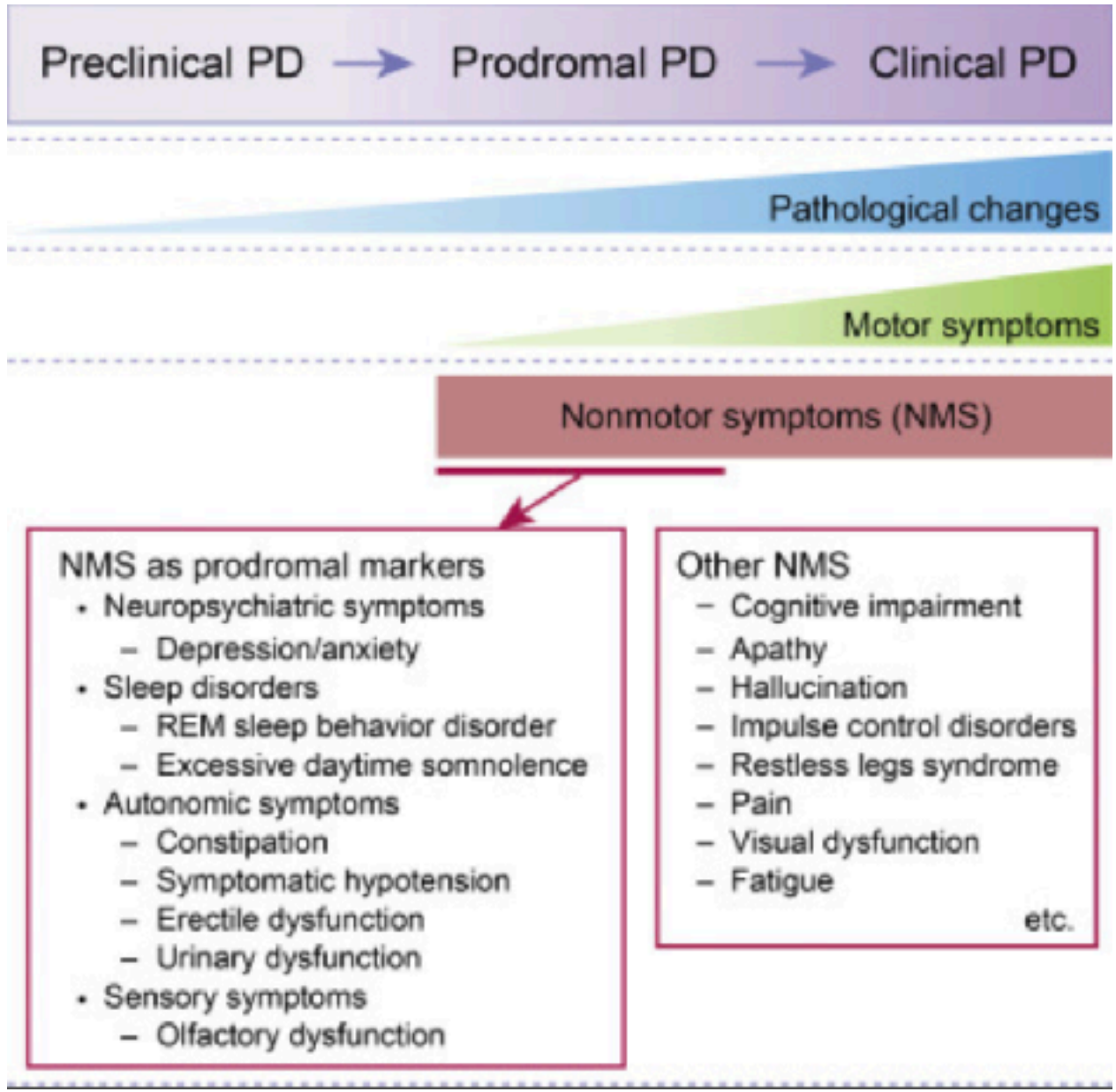
PD - not just a motor disorder

- Mood symptoms such as **depression, anxiety, and apathy** are some of the **non-motor** symptoms (NMS) of PD
- One large study of PwP found **50%** reported sadness and **45%** reported anxiety.
- NMS symptoms are strongly associated with quality of life (Gallagher et al. (2010) Mov Disord) and are **sometimes more bothersome than motor symptoms** (Li et al. (2010) Mov Disord).

Mood changes in PD

- Depression
- Anxiety
- Apathy
- Impulse Control Disorders (ICD)

stages of PD


Preclinical PD → Prodromal PD → Clinical PD
Pathological changes
Motor symptoms
Nonmotor symptoms (NMS)
NMS as prodromal markers
• Neuropsychiatric symptoms
– Depression/anxiety
• Sleep disorders
– REM sleep behavior disorder
– Excessive daytime somnolence
• Autonomic symptoms
– Constipation
– Symptomatic hypotension
– Erectile dysfunction
– Urinary dysfunction
• Sensory symptoms
– Olfactory dysfunction
Other NMS
– Cognitive impairment
– Apathy
– Hallucination
– Impulse control disorders
– Restless legs syndrome
– Pain
– Visual dysfunction
– Fatigue
etc.

depression in PD

- Depression is common: **35%** at diagnosis
- Doesn't always look like "regular" depression
  - **anger/frustration/irritability** > sad/down/ hopeless
  - masked facies
  - apathy/loss of motivation
- Passive thoughts of suicide or death ("would rather not be around" or "ok to not wake up tomorrow")

anxiety in PD

- Estimated at **20-40%** (Gallagher & Schrag, 2012).
  - *generalized:* worry about everything
  - *anticipatory:* worry about upcoming events
  - *fear of falling*
  - *OFF:* Occurs only when meds are low
- Overlap w/ autonomic symptoms (e.g. shortness of breath, temperature changes)

apathy in PD

- Occurs in **~60%** of patients with PD (Oguru et al., 2010, Pedersen et al., 2009).
- **Diminished motivation** that causes reduced function.
    - Don't enjoy things like you used to
    - Withdrawing from friends/family
    - Not engaged in activities
    - Often *harder for caregivers* than for PwP

impulse control disorders (ICD)

- Usually happens with high doses of dopamine medications:
  - dopamine agonists (pramiprexole, ropinerole, Neupro)
  - levodopa (Sinemet/Rytary/Crexont).
- Gambling, excessive spending, hyper-sexuality, excess eating, stuck on hobbies/technology use, repetitive cleaning/ organizing, "driven by motor," reduced sleep, irritability
- Often something person did at baseline but A LOT more (+*interferes with meals, sleep, relationships*).
- Treatment: reduction of dopamine medication, talk therapy

risk factors for mood issues in PD

- F>M, younger age
- Past history of mood symptoms or family history of mood disorders
- Cognitive impairment
- Longer disease duration
- Motor fluctuations (OFF time/Dyskinesia)
- Gait instability > tremor
- Sleep apnea, RBD, poor sleep
- Constipation, pain, fatigue, impaired IADL's
- Genetics: GBA>LRRK2

what causes mood issues in PD?

what causes mood issues in PD?

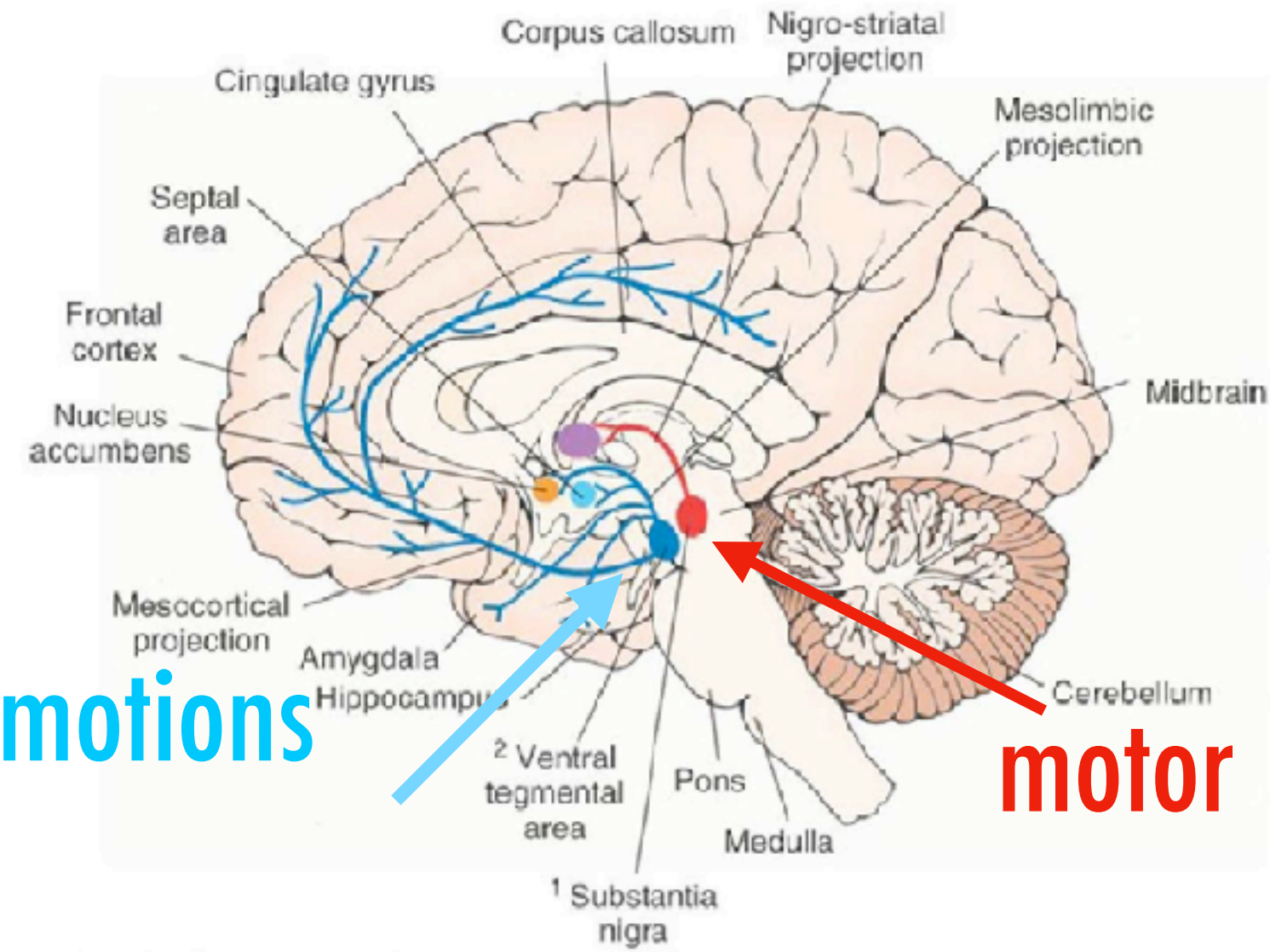
1) It can be hard.

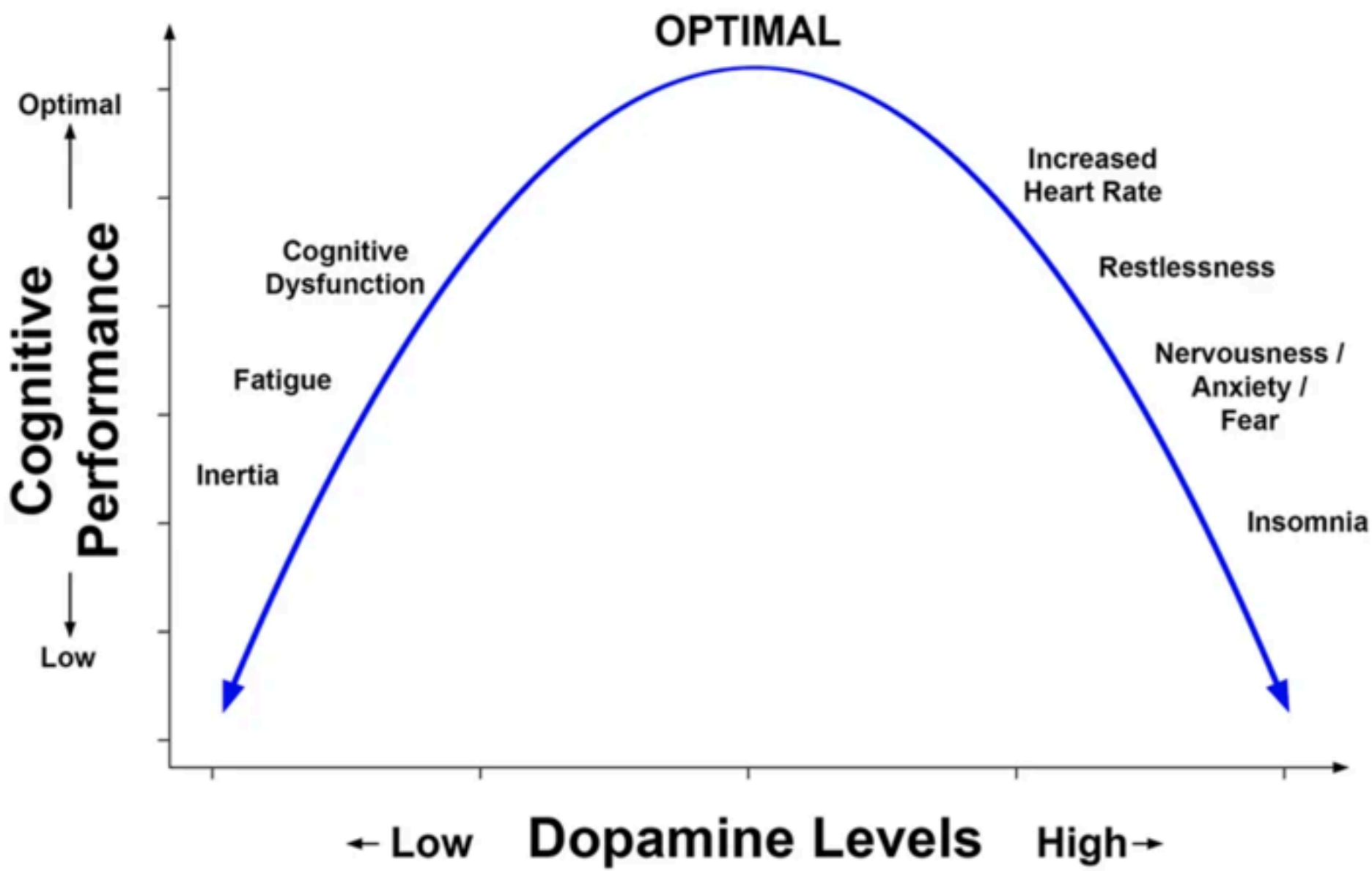
what causes mood issues in PD?

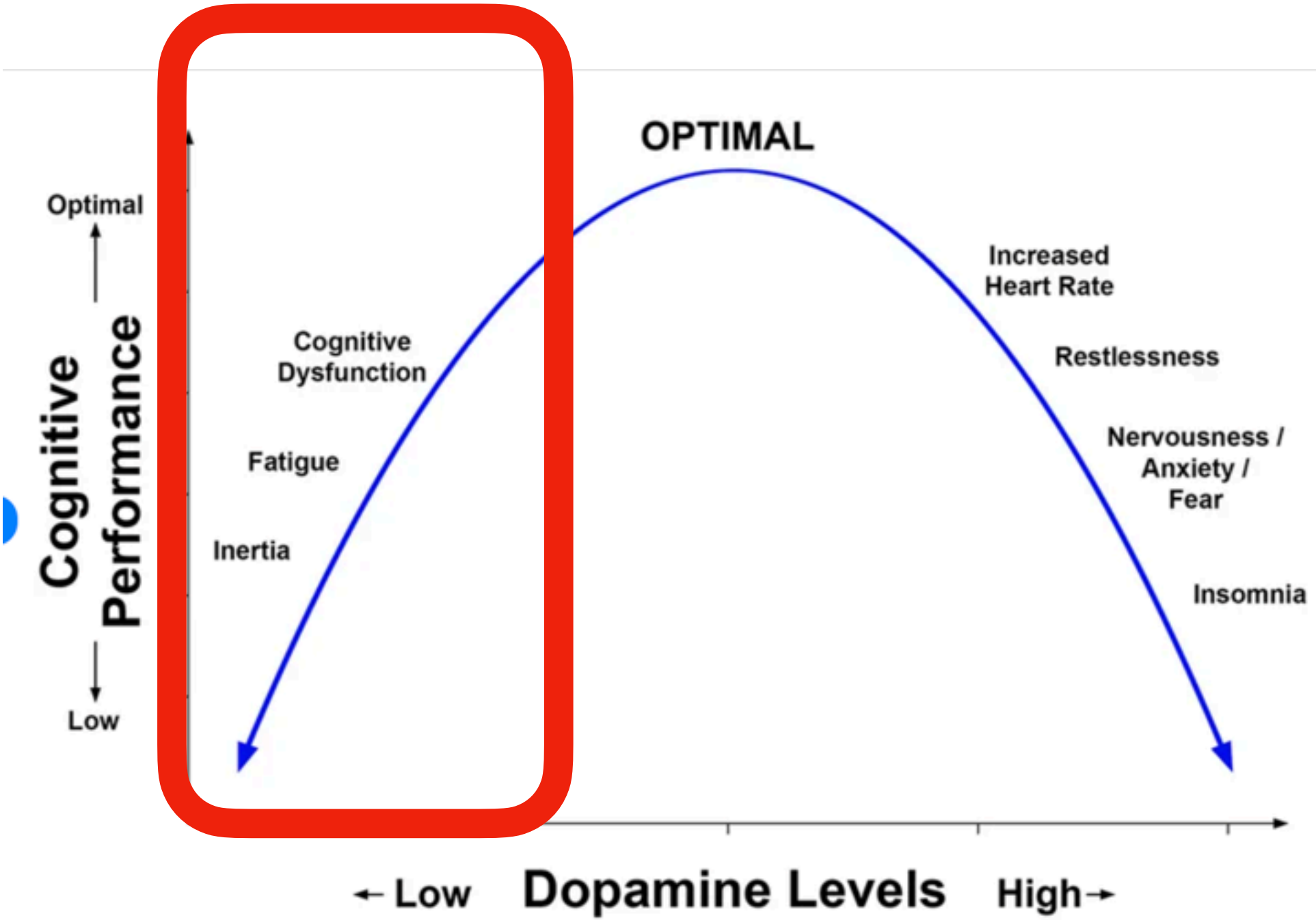
1) It can be hard.

2) changes in brain chemistry.

PD: loss of dopamine




OPTIMAL
Optimal
Cognitive Performance
Low
Cognitive Dysfunction
Fatigue
Inertia
Increased Heart Rate
Restlessness
Nervousness / Anxiety / Fear
Insomnia
← Low
Dopamine Levels
High →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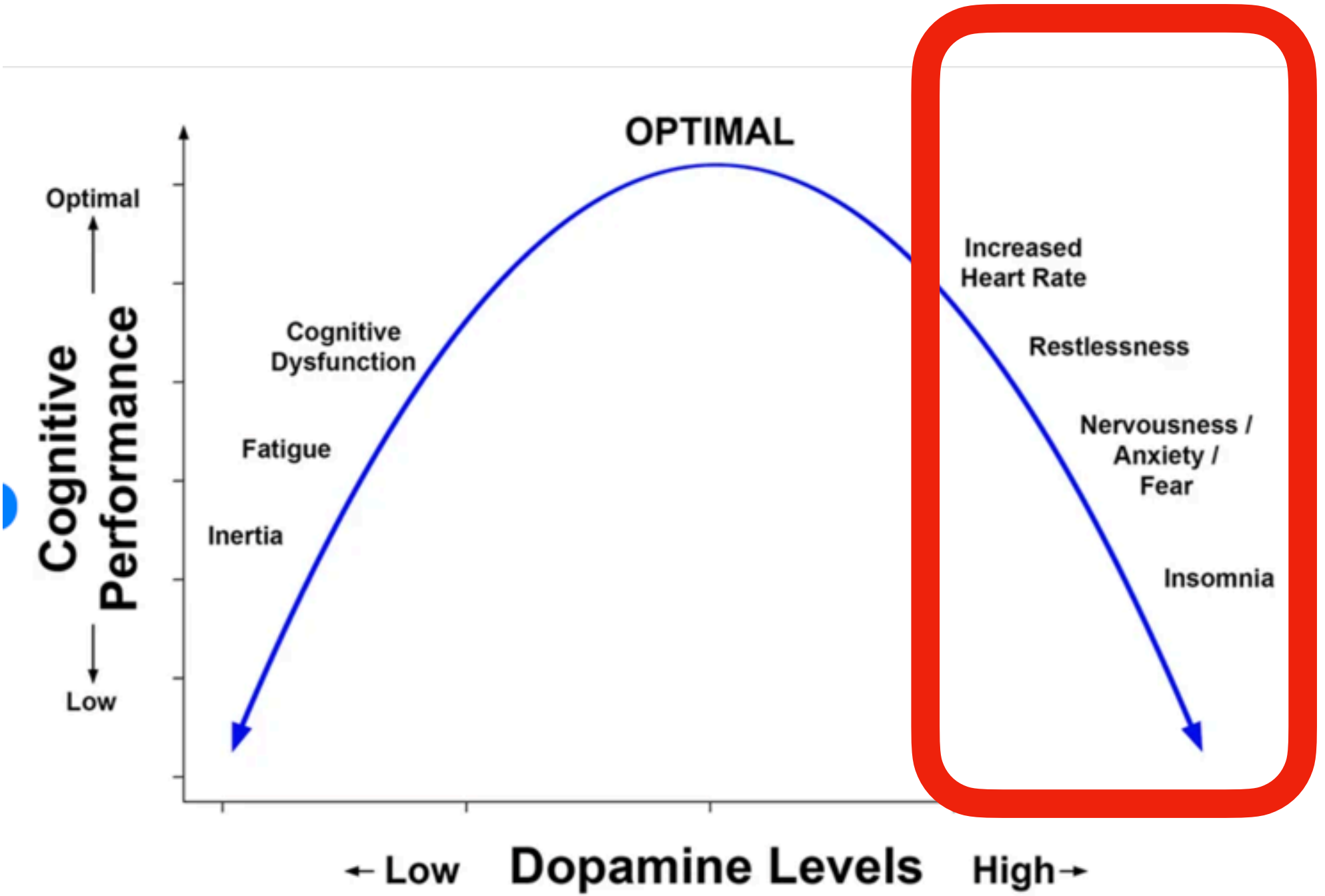
Insomnia
← Low
Dopamine Levels
High →

PD Medications: TOO LITTLE DA

- **OFF-Dysphoria:** If a dose is missed or has worn OFF, sometimes can have severe worsening of mood, feeling very down, sad, tearful (but improved when meds kick ON.)
- **OFF-Anxiety:** If a dose is missed or has worn OFF, sometimes can have severe worsening of anxiety, can be near panic, sometimes w/ shortness of breath (but improved when meds kick ON.)
- **Apathy:** May need more dopamine medications (can occur after DBS-related reductions).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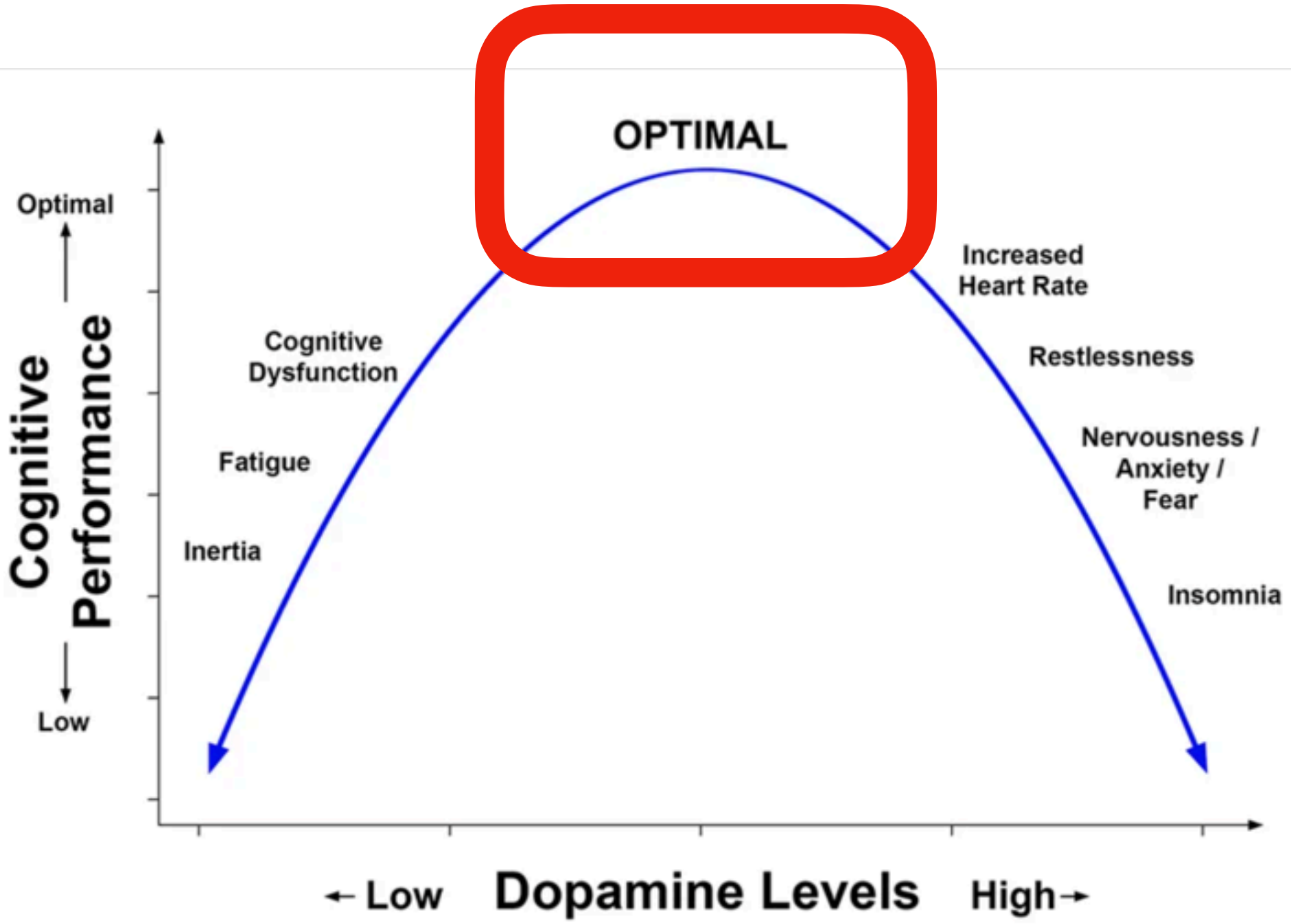
Nervousness / Anxiety / Fear
Insomnia
← Low
Dopamine Levels
High →

PD Medications: TOO MUCH DA

- **ON-Restlessness/Agitation:** **Too much dopamine** medications can cause dyskinesia and restlessness, fast speech, hypomanic, increased energy.
- **ON-ICD:** **Too much dopamine** can cause compulsive gambling, eating, buying/spending, hyper sexuality, compulsive computer use, cleaning, "futzing" around the house.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Dopamine Levels
High →

Mood after deep brain stimulation (DBS)

- Large reductions in dopamine medications after DBS can lead to apathy and mood worsening
- Rapid discontinuation of dopamine agonists (pramiprexole, ropinerole) can cause a withdrawal syndrome with severe depression and anxiety.
- Stimulation of the STN (subthalamic nucleus) can cause hypomania/elevated mood/increased ICD behaviors.
- More ON time should reduced OFF dysphoria/anxiety (but not always)

PD: not JUST dopamine

Dopamine pathway

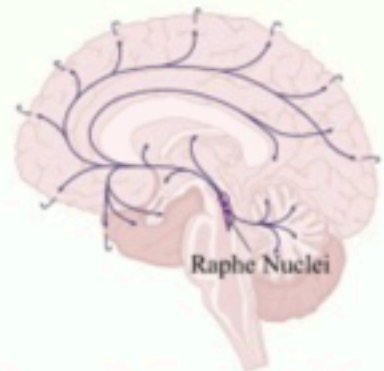
Abnormal regions for APD

- Caudate nucleus
- Prefrontal cortex

Abnormal regions for DPD

- Amygdala
- Striatum
- Thalamus

Serotonin pathway



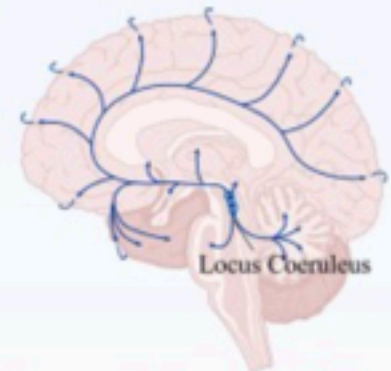
Abnormal regions for APD

- Bed nucleus of the stria terminalis

Abnormal regions for DPD

- Hippocampus
- Insula
- Lateral habenula
- Prefrontal cortex
- Raphe Nuclei

Norepinephrine pathway



Abnormal regions for APD

- Locus coeruleus

Abnormal regions for DPD

- Amygdala
- Hippocampus
- Locus coeruleus
- Prefrontal cortex

PD: not JUST dopamine

Dopamine pathway

Abnormal regions for APD

- Caudate nucleus
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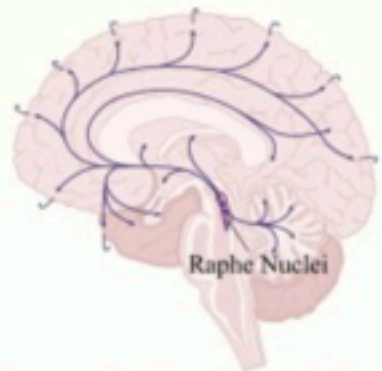

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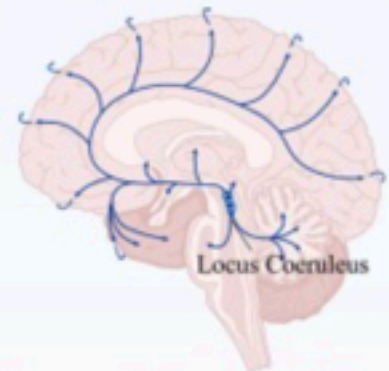
Norepinephrine pathway



Abnormal regions for APD

- Locus coeruleus

Abnormal regions for DPD

- Amygdala
- Hippocampus
- Locus coeruleus
- Prefrontal cortex

You're not doing it wrong

PD: not JUST dopamine

Dopamine pathway

Abnormal regions for APD

Caudate nucleus

Prefrontal cortex

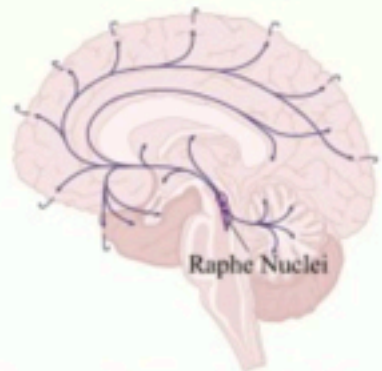
Abnormal regions for DPD

Amygdala

Striatum

Thalamus

Serotonin pathway



Abnormal regions for APD

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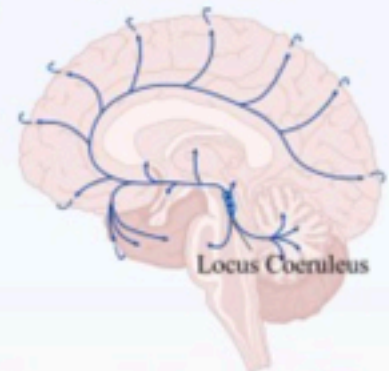
Norepinephrine pathway



Abnormal regions for APD

Locus coeruleus

Abnormal regions for DPD

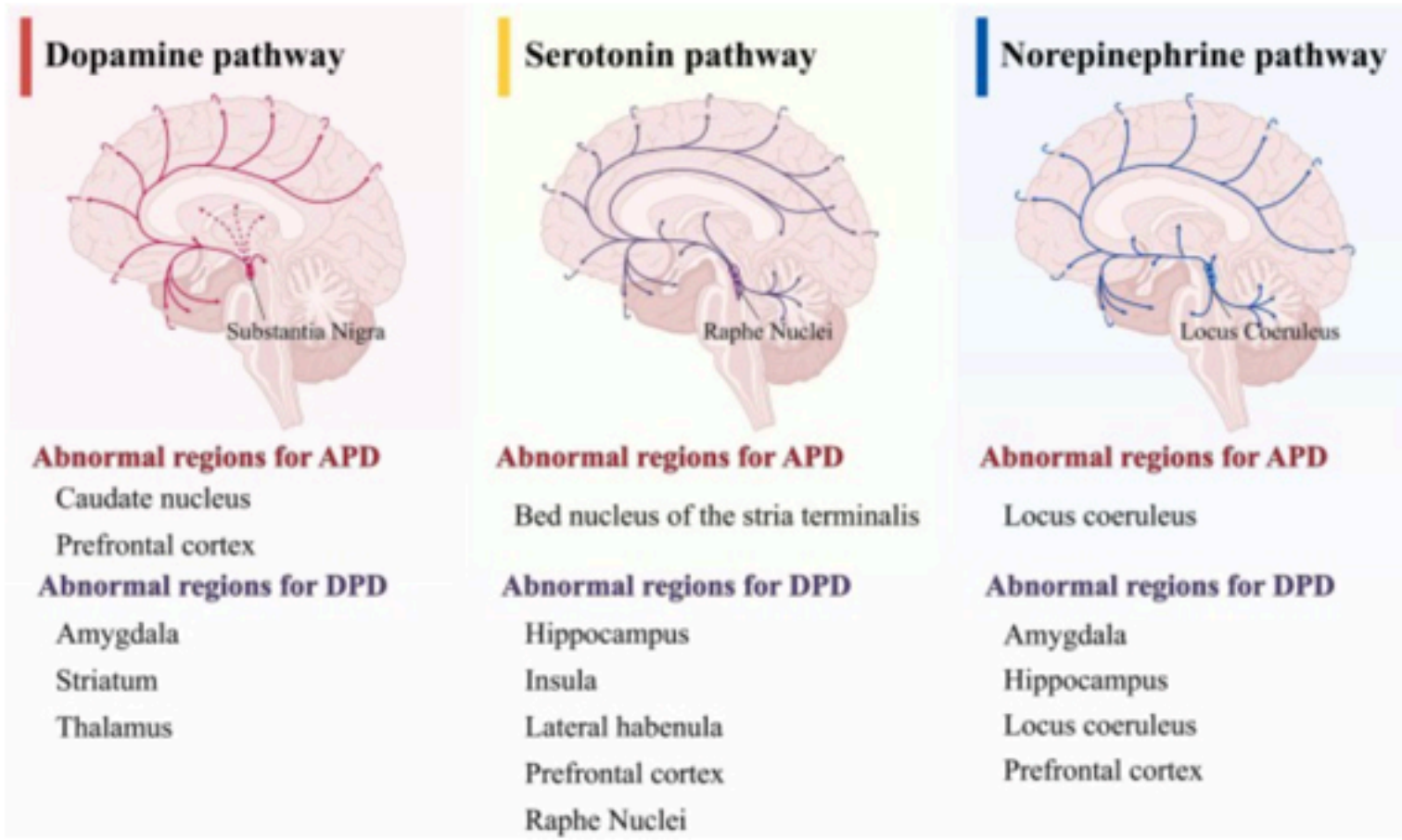
Amygdala

Hippocampus

Locus coeruleus

Prefrontal cortex

- **Medications targeting these pathways** can be very helpful



- **Dopamine:** levodopa, pramiprexole, ropinerole, Crexont etc.
- **Serotonin (SSRI):** Zoloft (+DA), Lexapro, Prozac, Paxil
- **Serotonin & Norepinephrine (SNRI):** Cymbalta, Effexor

PD: Effects of stress

- Causes **release of cortisol** in the brain, which has downstream effects on other neurotransmitters (amplifies fight or flight response)
- PD sometimes **diagnosed after a large stressor** (losing job, death of parent) causes 'rapid' worsening of symptoms
- **Tremor and motor symptoms often worse** with an acute stressor (then more tremor = more stress = more tremor.)
- Stress can cause **rapid unexpected wearing OFF**

what do I do for my mood?

Q: when is it happening?

- Present all the time
- Only when medications are wearing OFF or medications are late?
- Only in the dyskinetic state or with too much medication?
- When DBS stimulation settings are changed?
- Only in normal stressful situations?

potential treatments

- **Optimize dopamine medications**
- **Consider mood medications**

potential treatments

- Optimize dopamine medications
- Consider mood medications
- **Treat sleep apnea and optimize sleep**

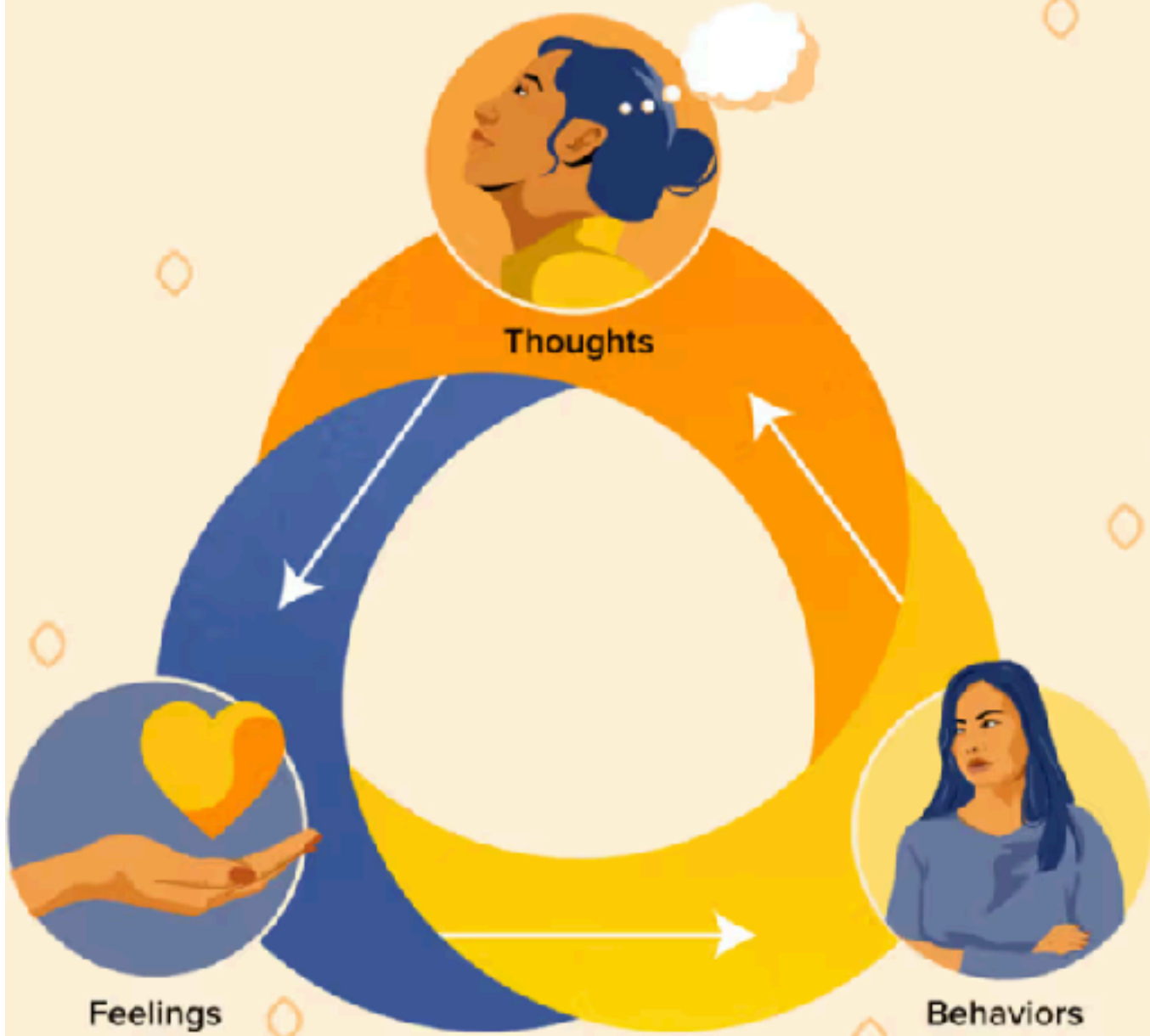
potential treatments

- Optimize dopamine medications
- Consider mood medications
- Treat sleep apnea and optimize sleep
- **Optimize DBS settings (if applicable)**

potential treatments

- Optimize dopamine medications
- Consider mood medications
- Treat sleep apnea and optimize sleep
- Optimize DBS settings (if applicable)
- **Talk therapy (CBT)**

Main Theory of CBT



The main theory behind CBT is that your thoughts, feelings, and behaviors all impact each other.

CBT for depression or anxiety

- Gold standard for treatment (+meds)
- Practical coping skills over 8-10 weekly sessions
- Identifies negative thoughts
- Develop strategies to challenge those thoughts
- Reduce avoidance behavior
- Learn problem-solving skills

CBT for depression or anxiety

Situation: You decline a dinner invitation with friends

Old Thought Pattern:

- **Thought:** "I'll just slow everyone down. They don't really want me there anyway. I'm not fun anymore."
- **Feeling:** Sad, lonely, anxious
- **Behavior:** Stay home, withdraw from friends
- **Result:** Increased isolation and depression

Using CBT Skills:

- **Challenge:** "Is this thought based on facts or feelings? Have my friends actually said they don't want me there? What evidence do I have that I'm 'not fun'?"
- **Alternative Thought:** "My friends invited me because they enjoy my company. I might need accommodations, but that doesn't mean I can't participate. I have value beyond my physical abilities."
- **New Behavior:** Accept the invitation, communicate needs (e.g., "Can we choose a restaurant with easy parking?")
- **Result:** Maintained social connections, positive experience, improved mood

CBT: scheduling for apathy

Step 1: Track Your Activities and Mood

- Keep a daily log of what you do and how you feel (0-10 scale)
- Notice patterns: Which activities improve your mood?

Step 2: Identify Pleasant and Meaningful Activities

- Things you used to enjoy
- Activities that give you a sense of accomplishment
- Social connections
- Physical movement

Step 3: Schedule Activities

- Start small—even 10 minutes counts
- Plan specific times
- Treat scheduled activities like important appointments

Step 4: Do the Activity—Even If You Don't Feel Like It

- Action comes before motivation in depression
- You don't have to "feel like it" to do it
- Mood often improves AFTER you start the activity

scheduling for apathy

Sample Weekly Activity Schedule:

Monday:

- 9:00 AM: 15-minute walk around the block (Mood before: 4/10, after: 6/10)
- 2:00 PM: Call a friend (Mood before: 5/10, after: 7/10)

Tuesday:

- 10:00 AM: Work on puzzle or hobby for 20 minutes (Mood before: 4/10, after: 6/10)
- 3:00 PM: Sit outside in sunshine for 15 minutes (Mood before: 5/10, after: 6/10)

Wednesday:

- 9:30 AM: Attend exercise class (Mood before: 4/10, after: 7/10)
- Evening: Watch favorite show (Mood before: 5/10, after: 6/10)

Key Principles:

- Schedule activities during your best "on" times
- Mix pleasurable activities with accomplishment activities
- Start with achievable goals
- Track mood before and after to see what helps
- Gradually increase as you build momentum

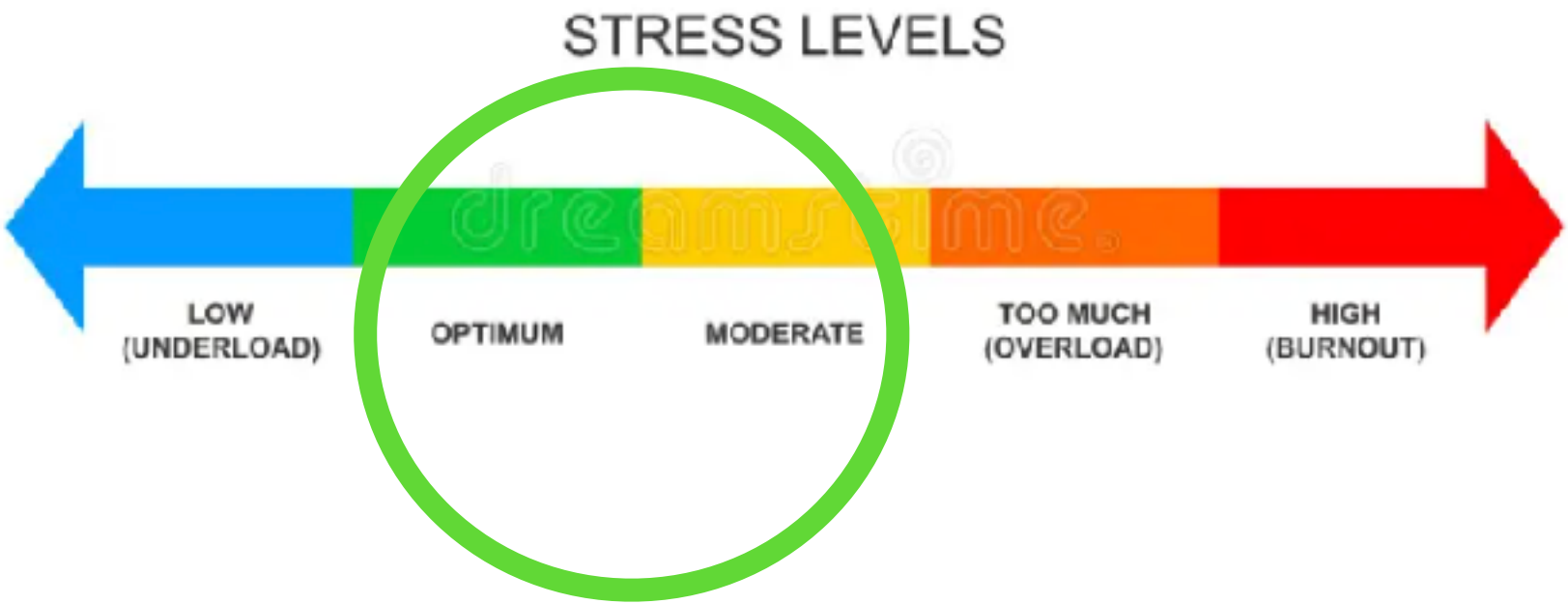
potential treatments

- Optimize dopamine medications
- Consider mood medications
- Treat sleep apnea and optimize sleep
- Optimize DBS settings (if applicable)
- Talk therapy (CBT)
- **Minimize chronic stressors**

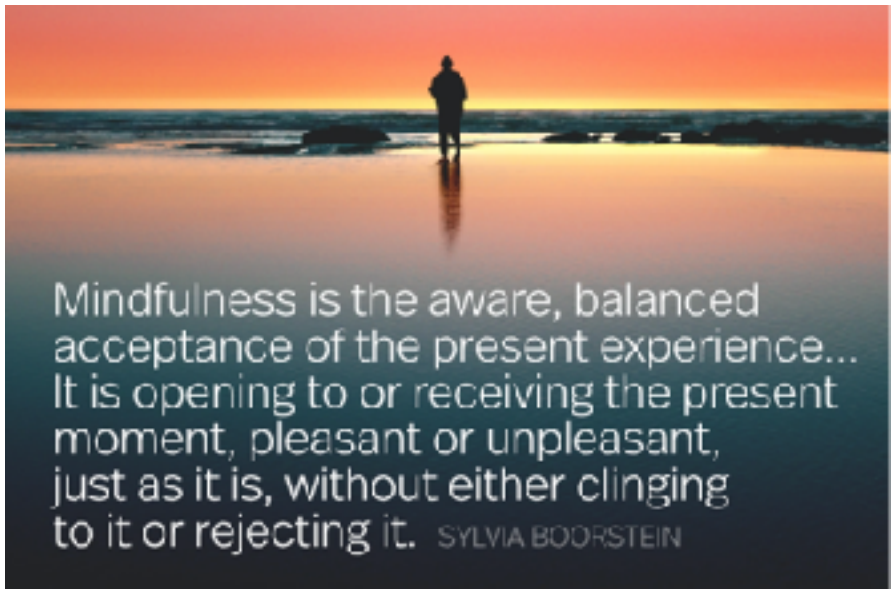
turning down the dial

turning down the dial

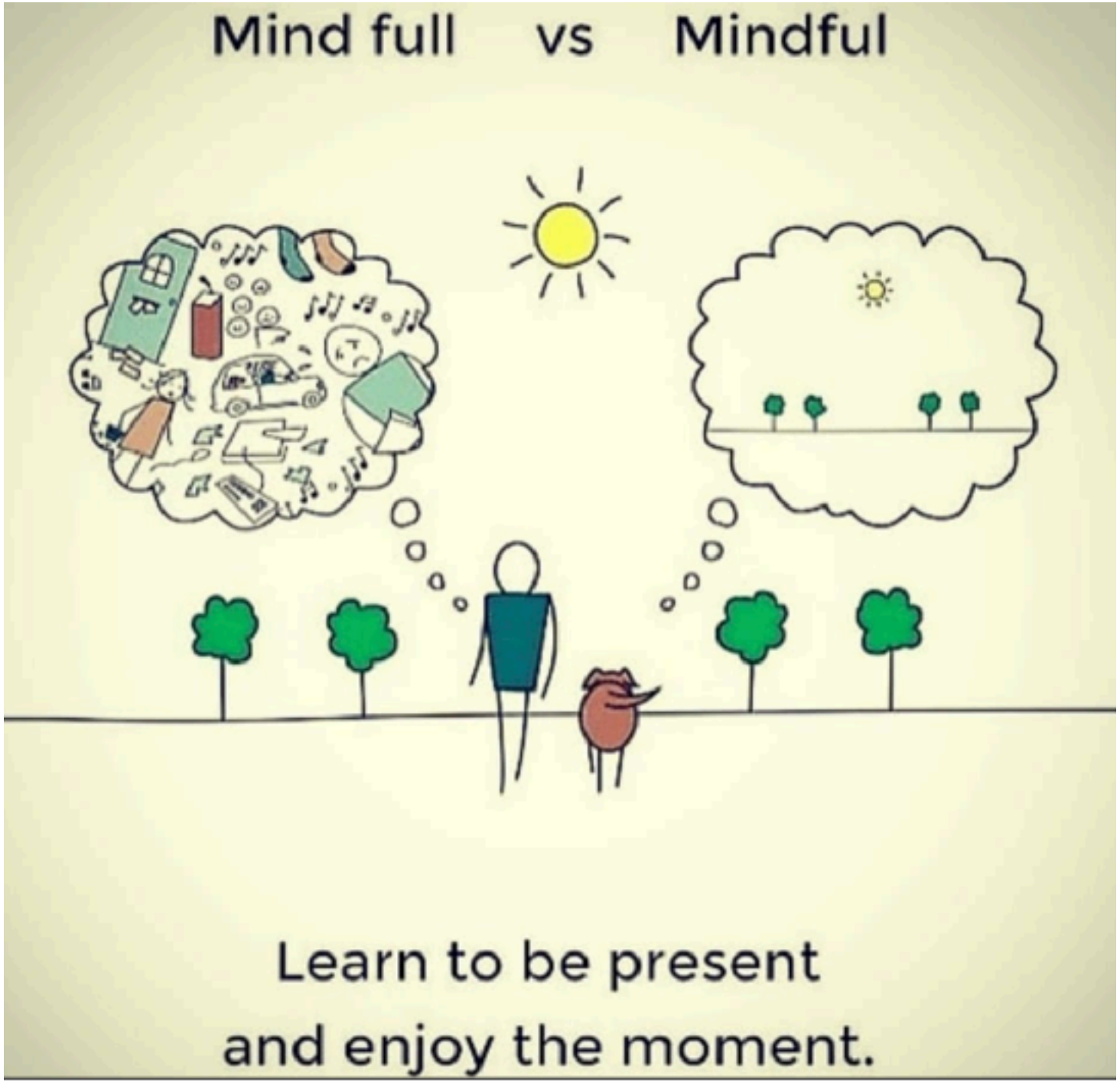
turning down the dial



mindfulness



“It's not a matter of letting go–you would if you could. Instead of 'let it go' we should probably say 'let it be'.”


Mind full vs Mindful
Learn to be present
and enjoy the moment.

five senses

- Name 5 things you can **see**
- 4 things you can **touch**
- 3 things you can **hear**
- 2 things you can **smell**
- 1 thing you can **taste**

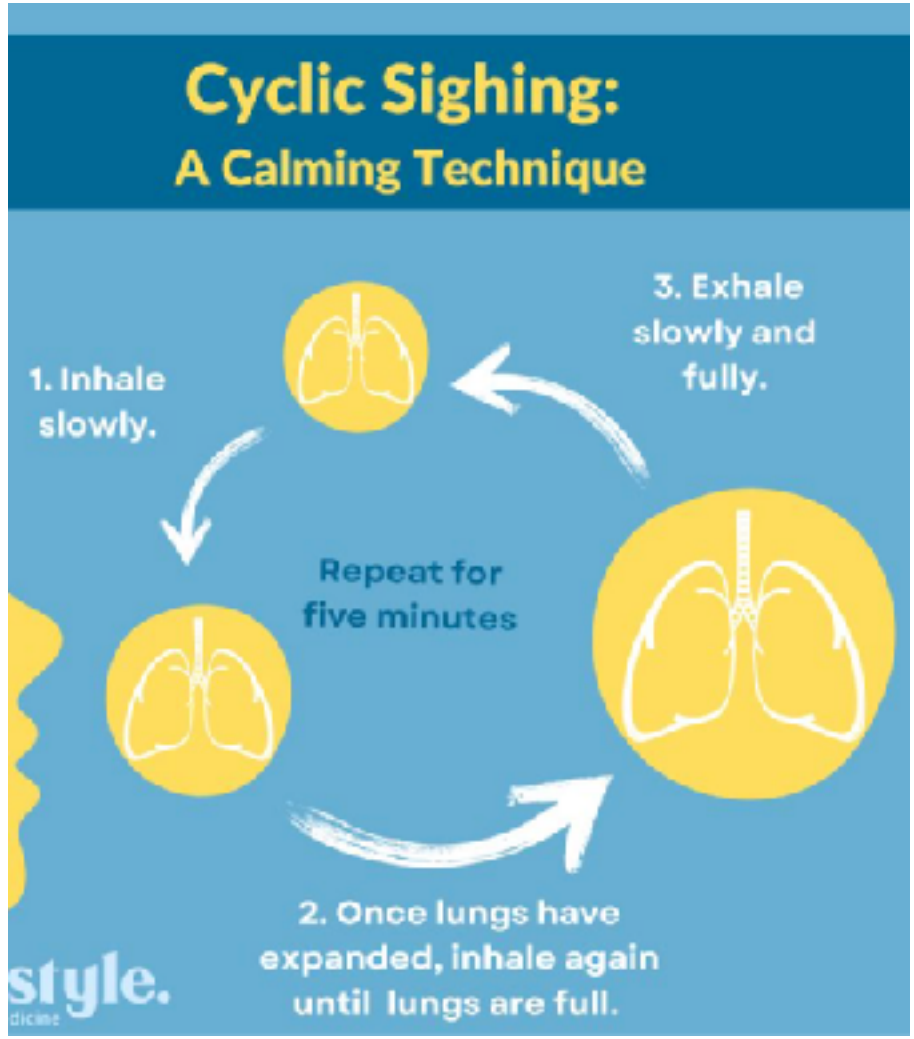
love & kindness affirmations

- “I am enough, just as I am.”
- “I show kindness to those around me.”
- “I am grateful for the people in my life."
- “May I be at peace.”
- “May all beings everywhere be happy.”


KEEP
CALM
AND
JUST
BREATHE

box breathing

cyclic sighing



potential treatments

- Optimize dopamine medications
- Consider mood medications
- Treat sleep apnea and optimize sleep
- Optimize DBS settings (if applicable)
- Talk therapy (CBT)
- Minimize chronic stressors
- **Exercise & social interaction**

exercise

Start w/ 5 minutes

social connections

summary

- Mood issues are common in PD.
- They are related to brain chemistry.
- Stress and poor sleep can make everything worse.
- Medications can be VERY helpful.
- *Other interventions:* Therapy, exercise, mindfulness, breathing, scheduling activities, social connections.