

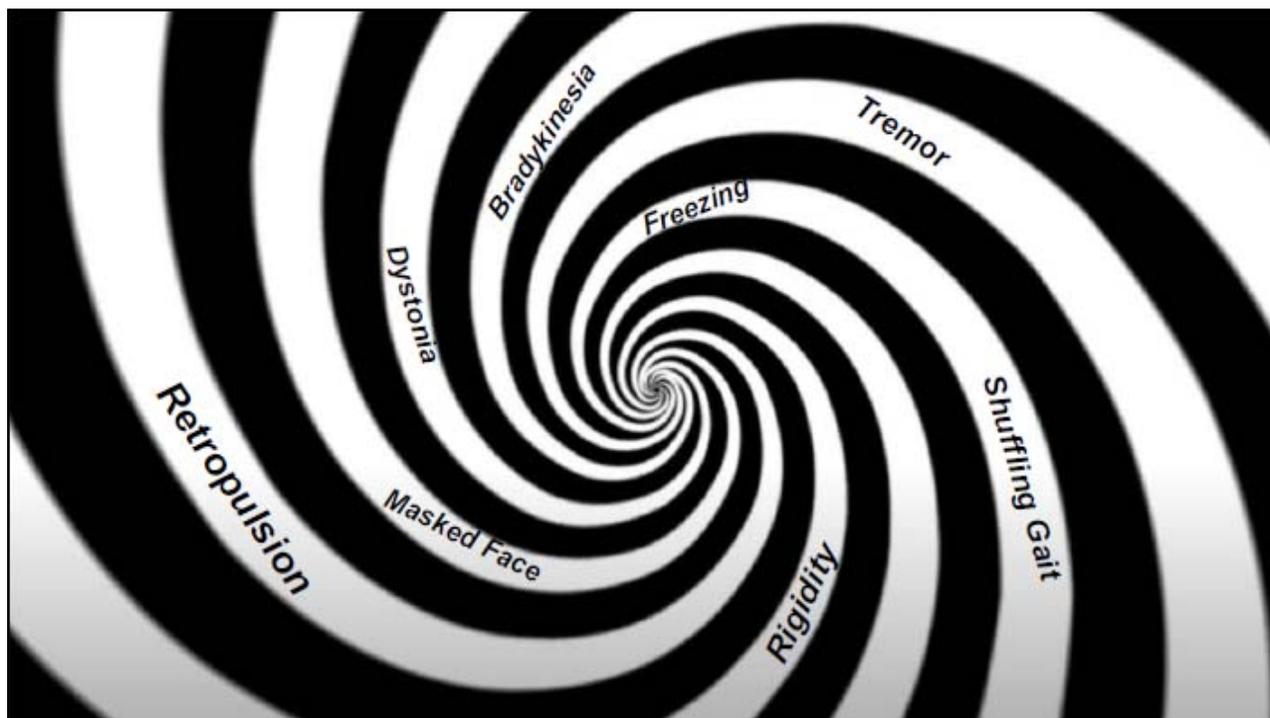
Enough vs. More: Neuropsychological Testing is More Useful than Genetic Testing in the Baseline PD Evaluation

AGREE

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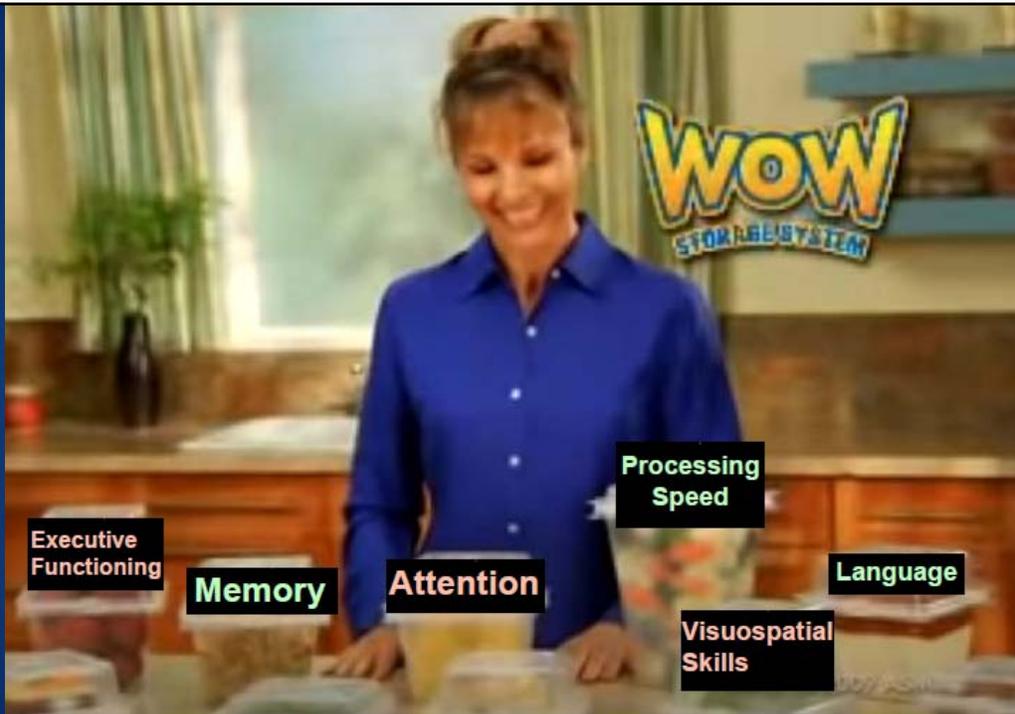




Introducing



Neuropsychological Assessment



Executive Functioning

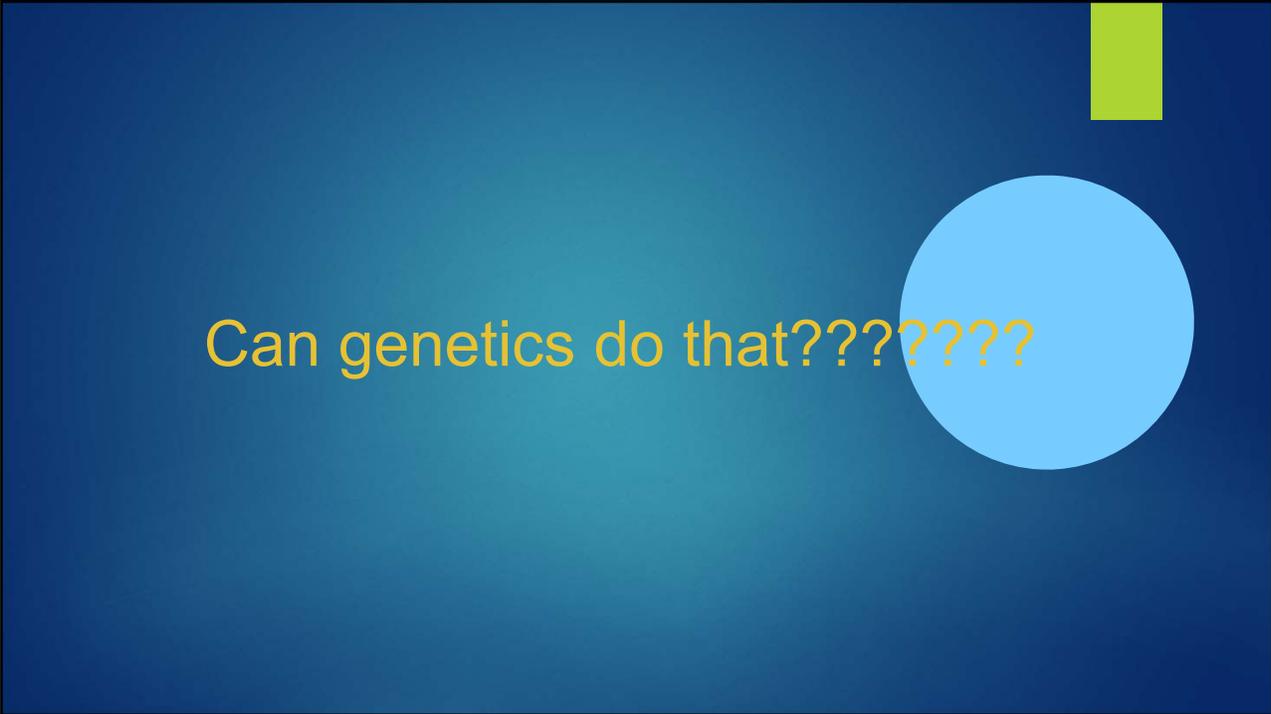
Memory

Attention

Processing Speed

Visuospatial Skills

Language



Can genetics do that???????



Patient Testimonials *(never heard from a single patient ever!)

I can't wait to do it again!!

It's So EASY!

I aced that!

FUN FUN FUN!!!

I feel so smart!

The Assessment of the Century!



LANGUAGE:

- Less impairment than AD

ATTENTION:

- Impaired and may fluctuate

VISUOSPATIAL FUNCTION:

- Significant impairment, more than AD

MEMORY:

- Visual and verbal memory impaired but less than AD. Retrieval more impaired than encoding.

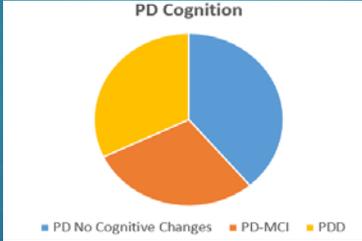
EXECUTIVE FUNCTION:

- Impaired, typically more than AD

(Emre, et al. 2007)

Cognition in PD

- ▶ Cognitive impairment is very common in PD.
- ▶ Approximately 50-60% of patients with PD develop cognitive changes
- ▶ Approximately 30-40% develop PDD



Over HALF of your patients will be dealing with cognitive changes throughout the course of the disease.

Can genetics do that???????

High Tech Science

- ▶ 15% to 40% meet criteria for PD-MCI at baseline
- ▶ There is a five time increased risk of PDD found in PD patients with MCI at baseline.
- ▶ Mild cognitive impairment at PD diagnosis predicts a highly increased risk for early dementia.

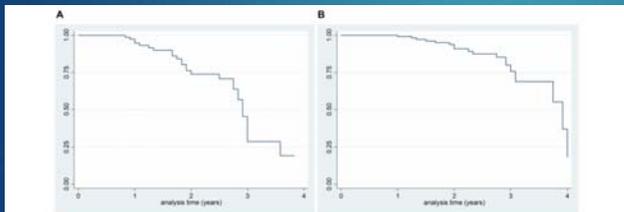
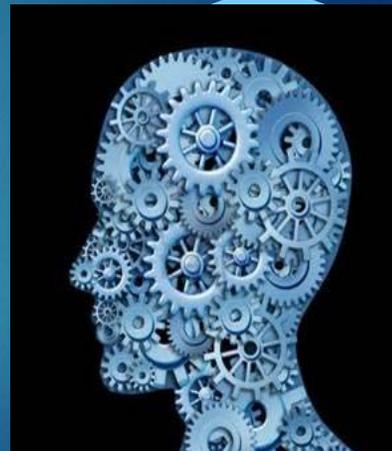
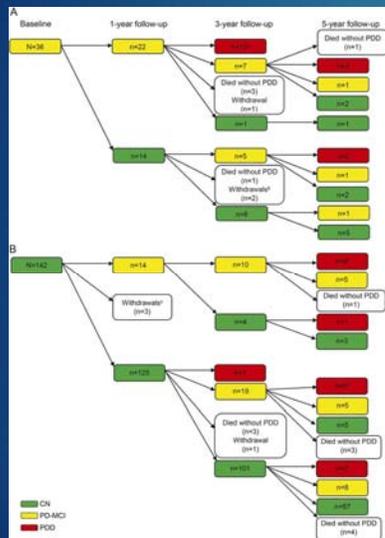


FIGURE 2 | Kaplan-Meier survival analysis of PD-MCI at baseline who developed PD-MCI at follow-up (A) and survival estimates of PD-MCI who developed PDD at follow-up (B).



Progression of PD-MCI to PDD



- ▶ 44.4% of patients with baseline PD-MCI and 33.3% of incident PD-MCI progressed to dementia
- ▶ Conversion rate to dementia was 59.1% in patients with persistent PD-MCI at 1-year follow up compared to 7.2% of those with normal cognition during the first year
- ▶ >40% of patients developed PD-MCI within 5 years
- ▶ 1/3 of patients progressed to dementia within 5 years of diagnosis



Evolution of PD-MCI during the 5-year study period

Pedersen et al. 2017

Risk Assessment

- ▶ PD-related cognitive deficits:
 - ▶ Affects quality of life
 - ▶ Strongest predictor for poor health related QOL
 - ▶ Increasing severity of PD-MCI is related to reduced QOL
 - ▶ Increases disability
 - ▶ Faster increase of disability was related to higher age at onset, levodopa-nonresponsive motor symptoms, and **cognitive dysfunction at the time of diagnosis**.
 - ▶ Reduces life expectancy,
 - ▶ In **early PD**, **mild cognitive impairment**, freezing of gait, hyposmia, reduced dopamine transporter activity in the caudate, and elevated leukocytes in the CSF were **significantly associated with shorter survival**.
 - ▶ Prolongs the duration of hospitalizations,
 - ▶ Increases burdens of caregiver

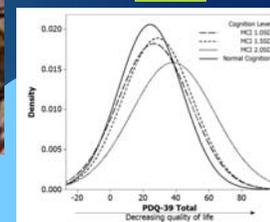
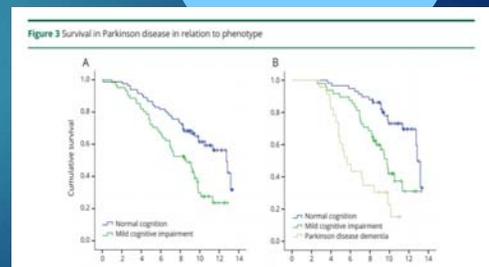


Fig. 1. Distribution of quality of life between cognitive groups. Graph of probability density function of PDQ-39 scores for the disease groups of normal cognition, PD-MCI 1 SD, PD-MCI 1.5 SD and PD-MCI 2 SD.



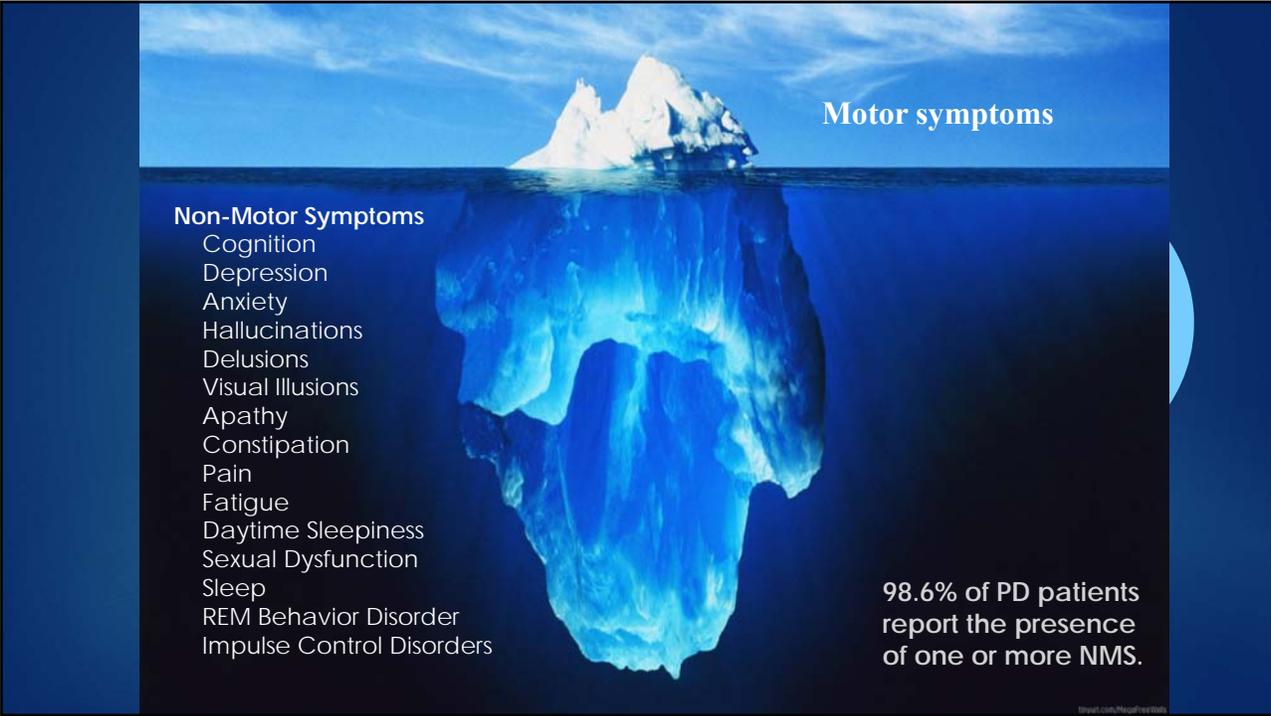
Velseboer et al. (2013) Backstrom et al. 2018

Don't live in fear Neuropsychological Assessments are HERE!!

- ▶ Recognizing that cognitive decline may be part of the disease and lapses are not volitional can aid in increasing frustration tolerance and improve QOL.
- ▶ Cognitive changes are sometimes an unexpected consequence of PD for patients and caregivers.
- ▶ Cognitive decline can cause more strain in a relationship than the motor symptoms.
- ▶ PD-MCI is the ideal time to implement pharmacological and non-pharmacological interventions to reduce risk of more severe cognitive decline and dementia.



Can genetics do that????????

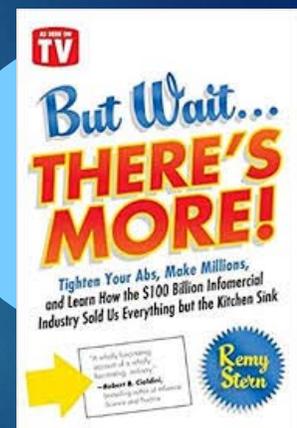




Psychiatric symptoms are the most frequently reported NMS (67%).

An Exclusive Offer Not Found in Stores

- ▶ Emotional functioning
 - ▶ Depression, anxiety, apathy
- ▶ Psychiatric symptoms
 - ▶ Hallucinations, delusions, visual illusions, Impulse Control Disorders
- ▶ Sleep
 - ▶ Daytime sleepiness, REM Behavior Disorder, poor sleep hygiene, fatigue
- ▶ Psychosocial interactions
 - ▶ Social support, caregiver burnout



Can genetics do that???????

Double Your Order Today!!

Depression and Anxiety in PD



- ▶ Severe depression 5%-20%; Subsyndromal depression 10%-30%
- ▶ Anxiety in 40% of PD patients
- ▶ PD patients have more depression than other similarly disabled patients.
- ▶ Depression and anxiety may be prodromal syndromes in PD.
- ▶ Symptoms of anxiety significantly affected quality of life more than depression, cognitive status, or motor stage (29% of variance in PDQ-39 sum score).

To improve the quality of life in patients with PD, we should make every effort to recognize and treat their depression and anxiety.

Reijnders et al (2008), Hanna and Cronin-Golomb (2012)

The Triple Threat!!

Apathy

- ▶ 40% of PD patients
- ▶ Can occur independently of depression and cognitive impairment - overlap is common
- ▶ Apathy was the symptom associated with worse PDQ-39 score but also presence of fatigue, attention/memory, and psychiatric symptoms had a negative impact on QoL.



Barone, P et al. 2009

REM Sleep Behavior Disorder

- ▶ In a prospective study, RBD was associated with increased risk of dementia.
- ▶ Four years after the initial evaluation, 48% with RBD developed dementia, compared to 0% of those without (P -adjusted = 0.014).
- ▶ All 13 patients who developed dementia had mild cognitive impairment on baseline examination.
- ▶ RBD at baseline also predicted the new development of hallucinations and cognitive fluctuations.



Postuma, R et al (2012)

Crush the Competition

- ▶ Baseline neuropsychological testing provides a vast amount of **cognitive, psychiatric, behavioral, and psychosocial information** that is useful to **patients, caregivers and providers**
 - ▶ As a baseline for comparison purposes in the future;
 - ▶ As a prediction of risk assessment and future treatment needs; and
 - ▶ At the time of the evaluation for clinical treatment to improve QOL.
- ▶ Can genetics do that???????

The Centuries Old Debate



Genetics!

Neuropsychology!



Genetics

Neuropsychology

Why don't we have both?

Genetics and neuropsychology!



Call Now!!!

- ▶ For the **Low Low** cost of 365 easy payments of \$250 each or your entire insurance deductible you can get a Baseline Neuropsychological Assessment!

But you must call NOW!!!

- ▶ Call within the next 10 minutes and we will

Double your Order!!

- ▶ Neuropsychological Assessment AND Genetic Testing for your entire insurance deductible* and your entire life savings**!!

Just pay shipping and handling
*Most insurances not accepted
**No insurance accepted

High Tech Science References

- ▶ Backstrom, D., Gransen, G., Eriksson, M., Domeliof, E., Linger, J., Jakobson, S., Riklnd, K., Zetterberg, H., Bjennow, K., and orggren, L. (2018). Early predictors of mortality in parkinsonism and Parkinson's disease *Neurology* 2018; 91 e2045-e2056. Pederson
- ▶ Barone, P et al.(2009) The PRIAMO study: A multicenter assessment of nonmotor symptoms and their impact on quality of life in Parkinson's disease. *Movement Disorders* 2009 15:24 (11) 1641-1649.
- ▶ Emre, M, Aarsland, D., Brown, R., et al. (2007). Clinical diagnostic criteria for dementia associated with Parkinson's disease *Movement Disorders*, 22:11, 1689-1707.
- ▶ Hanna, K and Cronin-Golomb, A. (2012). Impact of Anxiety on Quality of Life in Parkinson's Disease. *Parkinson's disease*, 2012: 640-707.
- ▶ Janvin CC, Larsen JP, Aarsland D, Hugdahl K. Subtypes of mild cognitive impairment in Parkinson's disease: progression to dementia. *Mov Disord*. 2006;21(9):1343-1349.
- ▶ Kuopio, A. (2001). The quality of life in Parkinson's disease: *Movement Disorders*, 15:2, 216-223.
- ▶ Nicoletti A, Luca A, Baschi R, Cicero CE, Mostile G, Davi M, Pilati L, Restivo V, Zappia M, Monastero R. Incidence of Mild Cognitive Impairment and Dementia in Parkinson's disease *Front Aging Neurosci*. 2019 Feb 8;11:21. doi: 10.3389/fnagi.2019.00021. eCollection 2019. PMID: 30800065
- ▶ Pedersen KF, Larsen, JP, Tsynes, OB, and Alves G. Natural course of mild cognitive impairment in Parkinson disease: a 5-year population-based study *Neurology* 88 (8), 767-774
- ▶ Postuma, R et al (2012) Rapid eye movement sleep behavior disorder and risk of dementia in Parkinson's disease: A prospective study
- ▶ Reijnders, J, Ehrf, U, Weber, W, Aarsland, D, Leentjens, A (2008). A systematic review of prevalence studies of depression in Parkinson's disease *Movement Disorders* 23:2 183-189
- ▶ Velseboer et al. (2013) Prognostic factors of motor impairment, disability, and quality of life in newly diagnosed PD. *Neurology* . 2013 Feb 12;80(7):627-33. doi: 10.1212/WNL.0b013e318281cc99. Epub 2013 Jan 23
- ▶ Weintraub D, Caspell-Garcia C, Simuni T, Cho HR, Coffey CS, Aarsland D, Alcalay RN, Barrett MJ, Chahine LM, Eberling J, Espay AJ, Hamilton J, Hawkins KA, Leverenz J, Litvan I, Richard I, Rosenthal LS, Siderowf A, York M; Parkinson's Progression Markers Initiative. Neuropsychiatric symptoms and cognitive abilities over the initial quinquennium of Parkinson disease. *Ann Clin Transl Neurol*. 2020 Apr;7(4):449-461. doi: 10.1002/acn3.51022. Epub 2020 Apr 13.

Thank You

That's all Folks!