conducted to determine differences in grit between PD-cognitively normal vs PD-MCI groups. Correlations and multiple hierarchical regressions controlling for significant demographics (i.e., age, education, sex), mood (i.e., depression, anxiety) and disease variables (i.e., disease duration, Levodopa equivalent dosage) with backwards elimination were conducted to evaluate the relationship between grit and fatigue (MFIS total score and MFIS cognitive and physical fatigue subscales). **Results:** There was no significant difference in grit total scores between PD patients who were cognitively normal or MCI ($p = .336$). Higher grit total scores predicted lower MFIS total ($\beta = -.290$, $p = .005$) and lower cognitive fatigue ($\beta = -.336$, $p < .001$) scores in the total sample, above and beyond relevant covariates as well as cognitive status. Grit scores were not significantly associated with physical fatigue ($\beta = -.206$, $p = .066$). Furthermore, cognitive status was not a significant predictor of fatigue scores in any of the models (all p's > .28). **Conclusions:** Findings indicate that higher levels of grit are associated with lower levels of fatigue, specifically cognitive fatigue, in individuals with PD. These results held true for those who were cognitively normal or with MCI, suggesting that grit may impact fatigue in non-demented PD patients regardless of cognitive status. These findings underscore the importance of considering grit when assessing or treating fatigue, particularly cognitive fatigue, in persons with PD.

Categories: Movement and Movement Disorders
Keyword 1: fatigue
Keyword 2: cognitive functioning
Keyword 3: personality
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18 Language Predicts Verbal Learning in Parkinson's Disease

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Objective: Cognitive impairment in Parkinson's disease (CIPD) is present in approximately 40% of patients. Language deficits, evidenced by poor word- retrieval, have historically characterized memory weaknesses in PD. That is, the "retrieval deficit hypothesis," suggests successful memory encoding, but poor retrieval subsequent to language and executive dysfunction, another prominent area of CIPD. However, recent studies suggest that memory impairments in PD are instead at the level of learning. At present, several suggested etiologies to explain learning impairments in PD exist that are not related to language, for example that processing speed deficits (another characteristic of CIPD) impact learning; however, other studies present evidence against this theory. Therefore, we hypothesize that deficits in language continue to be a primary component of memory impairment in PD, but at the level of learning rather than retrieval **Participants and Methods:** 85 adults (age M = 61.54, SD = 10.00; %female = 26.7; Dementia Rating Scale M = 137.77, SD = 5.63) diagnosed with Parkinson's disease according to the UK Brain Bank criteria for idiopathic PD, completed a neuropsychological test battery when "off" levodopa medication. The battery included the Boston Naming Test (BNT), verbal fluency tests (Controlled Oral Word Association [COWA] and category fluency), the California Verbal Learning Test, 2nd Edition (CVLT-II), and the Oral Symbol Digit Modalities Test (SDMT). Separate linear regression models were used to examine BNT, COWA, category fluency, and SDMT performance as predictors of total learning (sum of trials 1-5), short-delay free recall, long-delay free recall, and recognition discriminability on the CVLT-II. Analyses were adjusted for age, sex, education, and disease severity (MDS-Unified Parkinson's Disease Rating Scale, part 3 score). Follow up analyses adjusted for processing speed (oral SDMT). **Results:** Adjusted linear regression models revealed that both verbal fluencies predicted verbal learning (letter: ß = .37, $p < .01$; category: ß = .45, $p < .01$), long-delay free recall (letter: ß = .25, $p = .05$; category: ß = .34, $p = .01$), and recognition discriminability (letter: ß = .36, $p = .02$; category: ß =.33, $p = .03$) on

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the CVLT-II. Confrontation naming significantly predicted only long-delay free recall (ß =.31, p = .01). Processing speed predicted verbal learning (ß = .51, p < .01), short-delay free recall (ß = .35, p = .03), and long-delay free recall (ß = .44, p < .01). After adjusting for processing speed, letter fluency significantly predicted learning (ß = .23, p = .05) and discriminability (ß = .33, p = .04). Category fluency significantly predicted learning only (ß = .28, p = .04). Finally, confrontation naming significantly predicted only long-delay free recall (ß= .28, p = .01).
Conclusions: While processing speed was associated with verbal learning and recall, components of language predicted variance in verbal learning in PD that was not accounted for by speed. Additionally, discriminability was related to aspects of language that are more reliant on executive functioning. It is therefore suggested that verbal memory in PD is interpreted within the context of one's language ability. Other potential mechanisms and clinical implications are discussed.

Categories: Movement and Movement Disorders
Keyword 1: language
Keyword 2: memory disorders
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19 Oral Versus Written Trail Making Test Scores in Patients with Movement Disorders

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Objective: During the COVID-19 pandemic the Oral Trail Making Test (O-TMT) was frequently used as a telehealth-compatible substitute for the written version of the Trail Making Test (W-TMT). There is significant debate among neuropsychologists about the degree to which the O-TMT measures the same cognitive abilities as the W-TMT (i.e., processing speed for part A and set-shifting for part B). Given the continued use of the O-TMT – especially for patients with fine-motor or visual impairments – we examined how O-TMT and W-TMT scores were correlated in patients with movement disorders.
Participants and Methods: Between April 2021 and July 2022 thirty individuals with movement disorders (n=27 idiopathic Parkinson's disease [PD]; n=1 drug-induced PD; n=1 progressive supranuclear palsy [PSP]; n=1 possible PSP) completed in-person neuropsychological evaluations at the Emory Brain Health Center in Atlanta, GA. The patients were on average 71.3 years old (SD=7.5 years), had 16 years of education (SD=2.8 years), and the majority were non-Hispanic White (n=27 White; n=3 African American) and male (n=17). In addition to other neuropsychological measures, these patients completed both the O-TMT and the W-TMT. O-TMT and W-TMT administration was counterbalanced across patients and took place thirty-minutes apart. Raw scores (i.e., time in seconds) to complete O-TMT and W-TMT part A and part B, as well as discrepancy scores (part B – part A), were used for statistical analysis; a raw score of 300 seconds was assigned when a participant could not complete that section of the O-TMT or W-TMT. Given the non-normal distribution of the data, Spearman correlations were performed between O-TMT and W-TMT scores.
Results: Ten patients were unable to perform W-TMT part B. Of these, seven patients could also not perform O-TMT part B. Part A scores on O-TMT and W-TMT were not significantly correlated (r_s = 0.27, p = .15). In contrast, part B scores were strongly correlated, such that slower performances on O-TMT part B corresponded with slower performances on W-TMT part B (r_s = 0.82, p < .001). Discrepancy scores for the O-TMT and W-TMT were also significantly correlated, such that larger part A and part B discrepancy scores on O-TMT corresponded with larger discrepancy scores on W-TMT (r_s = 0.78, p <.001). The pattern of results was replicated when examining these correlations only in patients who could complete all parts of O-TMT and W-TMT (n=19); part A scores of the O-TMT and W-TMT were again not correlated (r_s = -0.20, p = .41), whereas the part B scores (r_s = 0.54, p = .02) and discrepancy scores (r_s = 0.59, p = .008) were significantly correlated.
Conclusions: Results suggest that an oral version of the Trail Making Test shows promise

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