Participants and Methods: 41 Veterans seen in a South-Central VA Memory Clinic between 08/2020 and 07/2022 served as participants. Neuropsychological assessment included gathering demographic information, chairside neurobehavioral examination (including FEP), cognitive testing, and collateral informant completed Functional Activities Questionnaire (FAQ). Diagnostic severity [no diagnosis, mild cognitive impairment (MCI), dementia (MNCD)] was determined based on the patient's cognitive and functional deficits as measured by neuropsychological testing and informant-rated functional deficits. Correlational analyses were conducted to examine the strength of possible relationships between FEP performance, diagnostic severity, informant-rated functional status including driving impairment. Linear regression analyses determined the extent to which diagnostic severity and FEP performance predict informant-reported driving and ADL impairments

Results: Participants were 97.5% male, 78% white, 22% black. Diagnostically, 3 patients received no diagnoses, 14 with MCI, and 24 with MNCD. Spearman rank correlations were computed; FEP performance was moderately negatively correlated with diagnostic severity [rho = -.35; $p < .05$] and driving impairment [rho = -.31; $p < .05$]. Diagnostic severity was moderately positively correlated with driving [rho= .44; $p < .05$] and total functional [rho = .65; $p < .05$] impairment. Total functional impairment positively correlated with reported driving impairment [rho = .58; $p < .05$]. Simple linear regressions tested if FEP performance and diagnostic severity independently predicted informant-reported driving and functional impairment. FEP performance predicted diagnostic severity ($R2 = .12$, $p < .05$) and reported driving impairment severity ($R2 = .10$, $p < .05$) but did not predict total functional impairment severity ($R2 = .06$, $p = .14$). Diagnostic severity predicted both informant-reported driving impairment severity ($R2 = .16$, $p < .05$) and functional severity ($R2 = .30$, $p < .05$). Multiple regression tested if diagnostic severity and FEP performance together was more predictive of driving and functional impairment than individually; the overall model was predictive of driving ($R2 = .19$, $p < .05$) and total functional ($R2 = .30$, $p < .05$) impairment, but only diagnostic severity significantly predicted reported driving ($B = .63$, $p < .05$) and functional ($B = 6.25$, $p < .05$) impairments.

Conclusions: FEP performance was associated with diagnosis and collateral informant concerns of patient driving ability but not statistically related to overall functional impairment or nondriving related ADLs. FEP demonstrates utility in identification of patients demonstrating concerning driving fitness per collateral informants and diagnostic severity due to rapidity of administration, ease of instructing providers, and implementation in a wide variety of clinical settings when a caregiver or informant may not be available. Future directions include explaining the relationship between FEP and driving ability and exploring associations between FEP and other neuropsychological instruments.

Categories: Executive Functions/Frontal Lobes
Keyword 1: executive functions
Keyword 2: driving
Keyword 3: everyday functioning
Correspondence: Ian Moore; Central Arkansas VA Healthcare system; ian.moore@va.gov

82 Examining the relationships between physiological, cognitive, and self-report indices of self-regulation

Jasmin Guevara, Steven Carlson, Tuan Cassim, Yana Suchy, Matt Euler, Paula Williams
University of Utah, Salt Lake City, Utah, USA

Objective: Self-regulation is typically operationalized in neuropsychological assessment through self-report scales and measures of attention and executive functioning. However, there have been mixed findings on the relationships between self-report measures and physiological and performance-based measures believed to represent self-regulation. Poorer self-regulation is related to an array of negative behavioral and health-related outcomes. Therefore, it is critical to understand the process of self-regulation and the relationships between measures neuropsychologists use to assess it. The current study aims to investigate the relationships between four purported measures of self-regulation: resting-state high-frequency heart rate variability (HRV; a stable individual difference variable that reflects parasympathetic capacity for adapting to changing environmental demands), behavioral performance on the Delis-Kaplan Executive Function System (D-KEFS)

and the Conners Continuous Performance Test – 3rd Edition (CPT-3), and trait self-control on the Brief Self-Control Scale (BSCS). It was hypothesized that physiological and behavioral self-regulation variables would predict the BSCS, such that higher resting HRV and better performance on the cognitive measures would predict higher self-reported self-control.
Participants and Methods: Thirty-five healthy adults (Age M = 29.80, SD =8.52, 45.7% female) recruited from the community completed the BSCS, CPT-3, and D-KEFS as part of a larger battery. Participants also completed a 10-minute eyes-open resting condition during electrocardiogram recording. High-frequency power (0.15 – 0.4 Hz) was extracted and used to operationalize resting HRV. Linear regression was used to test the predictive relationships between the BSCS total score, resting HRV, CPT-3 scores, and a residualized executive functioning score from the D-KEFS that controls for non-executive lower-order cognitive processes.
Results: Regression analyses indicated that neither the D-KEFS composite, the CPT-3 indices, nor resting HRV were related to the BSCS. Resting HRV predicted the CPT-3 Hit Reaction Time (HRT; B = -2.97, $p < .05$) and HRT Standard Deviation (HRT SD; B = -4.55, $p < .05$). Resting HRV was unrelated to the D-KEFS executive composite score. CPT-3 performance variables and D-KEFS composite score were also unrelated to one another.
Conclusions: Results showed that the BSCS was unrelated to resting HRV, CPT-3, and D-KEFS performance. However, higher resting HRV was related to faster and more consistent responding on the CPT-3. These findings contradict previous research showing associations between the BSCS and performance on executive functioning measures. The relationship between resting HRV and reaction time on the CPT-3 is generally consistent with literature that suggests that higher resting HRV is associated with better cognitive performance. Although the association between resting HRV and executive functioning was not significant in this modest sample, it was comparable to that reported in a recent meta-analysis. Overall, despite limitations related to the small sample size, the results raise questions regarding the construct validity of common neuropsychological indices of self-regulation. Further research is needed to clarify the nature of the self-regulation construct and the relation of neuropsychological measures of behavioral self-regulation to physiological and self-report indices.

Categories: Executive Functions/Frontal Lobes
Keyword 1: cognitive functioning
Keyword 2: executive functions
Keyword 3: self-report
Correspondence: Jasmin Guevara, University of Utah, jasmin.guevara@psych.utah.edu

83 Computational Modeling of Planning and Inhibition in the Tower of London

Joost A Agelink van Rentergem[1], Sanne B Schagen[1,2]
[1]Netherlands Cancer Institute, Amsterdam, Netherlands. [2]University of Amsterdam, Amsterdam, Netherlands

Objective: The Tower of London is commonly used to assess planning ability. Deficient outcomes may however have different causes: A participant may not have the ability to think a sufficient number of steps into the future, or may become, for example, impatient to evaluate different possible paths. Outcomes are thus not pure measures of the "planning" construct of primary interest, which may have contributed to findings of low reliability and low validity of these outcomes in the literature. The advent of computerized testing combined with computational modeling potentially allows to go beyond traditional outcomes such as “total number of moves” and “total time taken” and disentangle different processes that **are** of primary interest. The goal of the current study is to establish whether a model that consists of "planning ability" and "response inhibition" parameters can be used to describe Tower of London data.
Participants and Methods: We constructed an algorithm that produces Tower of London data, and a computational model that uses every single decision of a participant as input (e.g., whether a participant moves the red or the blue ball to the right peg in setting 15 when trying to get to setting 28). There are 210 unique decision situations that participants can encounter. Our algorithm and Bayesian hierarchical model uses two parameters for each participant as well as a guessing rule, that together determine the participant’s decision at every step. The appropriateness of the model was evaluated in a