high sensitivity and specificity in a variety of neurological populations, there is currently little known about its efficacy in tracking cognitive decline in individuals with HD. We used a mixed effects model to analyze MMSE and MoCA scores collected prospectively during 5 years of follow-up for 163 patients with HD seen at one academic HDSA Center of Excellence. Baseline mean age for the HD cohort was 51.35 years, mean education 14.46 years, and a mean CAG repeat length 43.95. Mean follow-up time was 3.33 years.
Results: Mean MMSE and MoCA scores at baseline were 25.13 (SD=1.66) and 22.76 (SD=3.70) respectively. At baseline, age and gender were not associated with MMSE and MoCA scores, while years of education were. Neither age nor gender predicted rate of decline for the MoCA while years of education predicted rate of decline for the MMSE. For the MMSE, each year of education predicted on average 0.51 points higher score at enrollment; for the MoCA, each year of education predicted on average 0.79 points higher score at enrollment. The mean rates of decline on the MMSE was 0.48 points per year ($p<.001$) while that on the MoCA was only 0.31 points annually ($p<.001$) in the first five years of observation.
Conclusions: The MMSE and MoCA decline significantly over time in an unselected HD population. The smaller rate of decline in the MoCA may be due, in part, to the greater variability in baseline, MoCA (SD=3.70) vs MMSE (SD=1.66) scores in our HD cohort. Unlike cortical dementias, such as Alzheimer's disease (AD), where declines of 2-3 points per year have been described for the MMSE and MoCA, much lower annual rates of decline have been reported in subcortical dementias such as Parkinson's disease. To our knowledge, this is the first report of rate of cognitive decline on the MMSE and MoCA in HD: such information is vital for adequately preparing patients and families for future needs, in addition to planning for interventional/treatment trials in HD.

Categories: Neurodegenerative Disorders
Keyword 1: Huntington's disease
Keyword 2: dementia - subcortical
Keyword 3: cognitive functioning
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56 Predictors of Finger Tapping Variability in Older Adults Evaluated for a Neurodegenerative Memory Disorder

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Objective: Patients with early Alzheimer Disease (AD) and Mild Cognitive Impairment of the Amnestic type (MCI-A) have been reported to show large variability of tapping scores. Factors that contribute to that variability remain undetermined. This preliminary study aimed to identify predictors of finger tapping variability in older adults evaluated for a neurodegenerative memory disorder. Based on earlier research with normally functioning adults, we predicted that the number of "invalid" tapping responses (i.e. failure of the index finger to adequately lift off the tapping key once it is depressed to produce the next number on a mechanical counter) and the female gender would predict finger tapping variability, but age and educational level would not predict variability.
Participants and Methods: This preliminary study included 4 groups of participants, comprised of 8 healthy controls (HC, 3 males; 73±7years); 12 persons with subjective memory complaints (SMC, 3 males; 69±5 years); 12 with MCI-A (7 males; 76±5 years) and 7 early AD (5 males; 75±6years). All participants were administered a modified version of the Halstead Finger Tapping Test (HFTT). Mean, range of tapping score (i.e. a measure of variability), and number of invalid taps across 7 trials in each hand were calculated. ANOVA was performed for the HFTT metrics with the main effect of group. Tukey HSD tests were used for post hoc comparisons between groups. Multiple regression analysis was performed to determine the degree to which the number of invalid tapping responses, sex, age, and educational level predicted finger tapping variability using all 4 groups.
Results: Mean tapping score did not vary significantly across groups in the dominant [$F(3, 35) = 0.633$, $p = 0.599$] or non-dominant [$F(3, 35) = 2.345$, $p = 0.090$] hand. Range score approached a significant difference between groups in the dominant hand [$F(3, 35) = 2.745$, $p = 0.058$], with a clear significant effect of group on range score in the non-dominant hand [$F(3, 35) = 4.078$, $p = 0.014$]. Range score in the non-dominant hand was significantly higher in the AD

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compared to SMC (p = 0.018) and HC (p = 0.024). Regression analysis revealed statistically significant findings for the dominant hand (R2 = 0.327, F (4, 34) = 4.130, p = 0.008) and for the non-dominant hand (R2 = 0.330, F (4, 34) = 4.180, p = 0.007). For both the dominant and non-dominant hands, number of invalid taps significantly predicted range score (β = 0.453, p = 0.044, and β = 0.498, p = 0.012, respectively). Sex, age, and education years did not predict range scores.
Conclusions: Variability of finger tapping in patients evaluated for neurodegenerative memory disorders and aged matched controls is predicted by the number of invalid tapping responses (comprising over 30% of the variance), but not by demographic variables in this clinical sample. Neurodegenerative disorders may eliminate a sex effect.

Categories: Neurodegenerative Disorders
Keyword 1: dementia - Alzheimer's disease
Keyword 2: motor function
Keyword 3: mild cognitive impairment
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57 Traumatic Brain Injury and Concussion in Patients with Frontotemporal Dementia Spectrum Diagnoses

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Objective: Traumatic brain injury (TBI) and concussion are associated with increased dementia risk. Accurate TBI/concussion exposure estimates are relatively unknown for less common neurodegenerative conditions like frontotemporal dementia (FTD). We evaluated lifetime TBI and concussion frequency in patients diagnosed with a range of FTD spectrum conditions and related prior head trauma to cavum septum pellucidum (CSP) characteristics observable on MRI.
Participants and Methods: We administered the Ohio State University TBI Identification and Boston University Head Impact Exposure Assessment to 108 patients (age 69.5 ± 8.0, 35% female, 93% white or unknown race) diagnosed at the UCSF Memory and Aging Center with one of the following FTD or related conditions: behavioral variant frontotemporal dementia (N=39), semantic variant primary progressive aphasia (N=16), nonfluent variant PPA (N=23), corticobasal syndrome (N=14), or progressive supranuclear palsy (N=16). Data were also obtained from 217 controls ("HC"; age 76.8 ± 8.0, 53% female, 91% white or unknown race). CSP characteristics were defined based on width or "grade" (0-1 vs. 2+) and length of anterior-posterior separation (millimeters). We first describe frequency of any and multiple (2+) prior TBI based on different but commonly used definitions: TBI with loss of consciousness (LOC), TBI with LOC or posttraumatic amnesia (LOC/PTA), TBI with LOC/PTA or other symptoms like dizziness, nausea, "seeing stars," etc. ("concussion"). TBI/concussion frequency was then compared between FTD and HC using chi-square. Associations between TBI/concussion and CSP characteristics were analyzed with chi-square (CSP grade) and Mann-Whitney U tests (CSP length). We explored sex differences due to typically higher rates of TBI among males.
Results: History of any TBI with LOC (FTD=20.0%, HC=19.2%), TBI with LOC/PTA (FTD:32.2%, HC=31.5%), and concussion (FTD: 50.0%, HC=44.3%) was common but not different between study groups (p's>.4). In both FTD and HC, prior TBI/concussion was nominally more frequent in males but not significantly greater than females. Frequency of repeat TBI/concussion (2+) also did not differ significantly between FTD and HC (repeat TBI with LOC: 6.7% vs. 3.3%, TBI with LOC/PTA: 12.2% vs. 10.3%, concussion: 30.2% vs. 28.7%; p's>.2). Prior TBI/concussion was not significantly related to CSP grade or length in the total sample or within the FTD or HC groups.
Conclusions: TBI/concussion rates depend heavily on the symptom definition used for classifying prior injury. Lifetime symptomatic TBI/concussion is common but has an unclear impact on risk for FTD-related diagnoses. Larger samples are needed to appropriately evaluate sex differences, to evaluate whether TBI/concussion rates differ between specific

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