

participants completed a neuropsychological battery (FAS/CFL, AVLT, DKEFS Color-Word Test) at baseline, then 2, 4, and 6 months post-surgery. Outcomes include raw scores for verbal fluency, immediate and delayed recall, and DKEFS Color-Word Inhibition trial (Trial 3) completion time. At 2, 4, and 6 months, the neurostimulation type (directional versus ring mode) was randomized for each participant. We compared baseline scores for all cognitive outcome measures using Welch's two-sample t-tests and used linear mixed effects models to examine longitudinal effects of hemisphere and stimulation on cognition. This test battery was converted to a teleneuropsychology administration because of COVID-19 mid-study, and this was included as a covariate in all statistical models, along with years of education, baseline cognitive scores, and levodopa equivalent medication dose at each time point.

Results: At baseline, patients who underwent left hemisphere implants scored lower on verbal fluency than right implants ($t(20.66) = -2.49, p = 0.02$). There were not significant differences between hemispheres in immediate recall ($p = 0.57$), delayed recall ($p = 0.22$), or response inhibition ($p = 0.51$). Post-operatively, left STN DBS patients experienced significant declines in verbal fluency over the study period ($p = 0.02$), while patients with right-sided stimulation demonstrated improvements ($p < .001$). There was no main effect of stimulation parameters (directional versus ring) on verbal fluency, memory, or inhibition, but there was a three-way interaction between time, stimulation parameters, and hemisphere on inhibition, such that left STN DBS patients receiving ring stimulation completed the inhibition trial faster ($p = 0.035$). After surgery, right STN DBS patients displayed faster inhibition times than patients with left implants ($p = 0.015$).

Conclusions: Declines in verbal fluency after bilateral stimulation are the most commonly reported cognitive sequelae of DBS for movement disorders. Here we found group level declines in verbal fluency after unilateral left STN implants, but not right STN DBS up to 6 months after surgery. Patients with right hemisphere implants displayed improvements in verbal fluency. Compared to bilateral DBS, unilateral DBS surgery, particularly in the right hemisphere, is likely a modifiable risk factor for verbal fluency declines in patients with Parkinson's disease.

Categories: Neurostimulation/Neuromodulation

Keyword 1: Parkinson's disease

Keyword 2: neurostimulation

Keyword 3: movement disorders

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Poster Session 02: Acute & Acquired Brain Injury

9:30 - 10:40am

Thursday, 2nd February, 2023

Town & Country Foyer

1 Quantity or quality? Comparing objective and subjective participation measures to predict quality of life in aging mSTBI.

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Objective: Community reintegration and participation have been shown to be significantly correlated to improved Quality of Life (QoL) following moderate to severe traumatic brain injury (mSTBI), yet these models often come with significant levels of unaccounted variability (Pierce and Hanks, 2006). Measures for community participation frequently employ objective measures of participation, such as number of outings in a week or current employment status (Migliorini et al., 2016), which may not adequately account for lifestyle differences, especially in aging populations. Less often integrated are subjective measures of an individual's own belongingness and autonomy within the community (Heineman et al., 2011), also referred to as their participation enfranchisement (PE). The present study examines three questions pertinent to the potential clinical value of PE. First, do measures of objective participation significantly predict an individual's PE ratings? Second, are both types of measures equally successful predictors of QoL for aging individuals with chronic-stage

msTBI. Finally, would controlling for either objective or subjective integration ratings enable neurocognitive assessments to better predict QoL post injury?

Participants and Methods: 41 older-adults ($M=65.32$; $SD=7.51$) with a history of msTBI were included ($M=12.59$ years post-injury; $SD=8.29$) for analysis. Subjective community integration was measured through the Participation Enfranchisement Survey. The Participation Assessment with Recombined Tools–Objective (PART-O) provided the objective measurement of participation. Quality of life was assessed through the Quality of Life after Brain Injury (QOLIBRI). An estimate of neurocognitive performance was created through the Brief Test of Adult Cognition by Telephone (BTACT), which includes six domains including: verbal-learning and memory (immediate and delayed recall), working memory (digit-span backwards), reasoning (number sequencing), semantic fluency (category fluency), and processing speed (backwards counting). Performance on the BTACT, PE ratings, and PART-O scores were included as the dependent variables in stepwise, linear regression models predicting QoL ratings to assess the differential contribution of the dependent variables and potential interaction effects.

Results: While both the PART-O ($f(1,39)=5.52$; $p=.024$, $\eta^2=.124$) and the PE survey ($f(1,39)=14.31$; $p<.001$, $\eta^2=.268$) significantly predicted QoL, the addition of PE in the PART-O model resulted in significant (20.9%) reduction in unaccounted variance. Further in the model controlling for PE, PART-O no longer provides a significant ($p=.15$) contribution to the model estimating QoL ($f(2,38)=8.41$; $p=.001$). Performance on the BTACT correlated with PART-O ($p<.0001$), but not PE ($p=.13$) ratings. Finally, across two models controlling for BTACT performance, PE ($p=.002$, partial $\eta^2=.23$), but not PART-O ($p=.28$, partial $\eta^2=.031$) contributed significantly to QoL predictions. No significant interactions between PART-O, PE, and/or BTACT were observed when added to any model.

Conclusions: MsTBI impacts nearly every facet of an individual's life, and as such, improving QoL post-injury requires a broad, yet well-considered approach. The objective ratings of participation, subjective PE, BTACT performance, all independently predicted quality of life in this sample. However, after controlling

for neurocognitive assessment performance, PE was shown to independently contribute to quality of life, while the PART-O ratings no longer provided significant contribution. While community integration is a vital factor to consider for long-term rehabilitation, tailoring what "integration" means to the patient may hold significant potential to improve long-term quality of life.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

Keyword 1: traumatic brain injury

Keyword 2: treatment outcome

Keyword 3: cognitive rehabilitation

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2 The Longitudinal Relationship Between Concussion History, Years of Football Participation, and Alcohol Use Among Former National Football League (NFL) Players: an NFL-LONG Study

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Objective: It has been posited that alcohol use may confound the association between greater concussion history and poorer neurobehavioral functioning. However, while greater alcohol use is positively correlated with neurobehavioral difficulties, the association between alcohol use