Practice Effects on Repeat Neuropsychological Assessment in Chronic Severe TBI

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Background
- Practice effects (PE) are factors inherent to repeat assessment that result in improved performance, such as familiarity with test procedures, repeated exposure to test materials, and development of test-taking strategies (Bartels et al., 2010; Calamia et al., 2012).
- Failure to account for PE can cause clinicians to make inaccurate conclusions and can compromise the validity of findings (Calamia et al., 2012).
- Substantial PE have been found for tasks that are novel, rely on motor speed, involve fluid abilities, force the examinee to acquire the answer during the test, and involve responses that have not been previously encountered (Duff et al., 2012; Lezak et al., 2012).
- Tests that involve unique features and objects or have a single solution increase the risk for PE (Lezak et al., 2012).
- The magnitude of PE and domains affected are moderated by clinical diagnosis and severity, as supported by research for individuals with severe traumatic brain injury, premotor, Alzheimer’s disease, and Alzheimer’s disease (Gavett et al., 2016).
- The differential impact of PE based on disorder severity in Alzheimer’s disease raises concerns that severity of neurologic injury may impact the pattern of PE in other clinical populations.
- Given the diverse pathophysiology and etiology of deficits associated with TBI, it is likely that the pattern of PE across the spectrum of TBI severity widely differs.
- As there is no known research on PE for individuals with chronic severe traumatic brain injury (sTBI), this study aims to identify the pattern of practice effects for this population.

Hypothesis: In contrast to the expected pattern of PE, the pervasive cognitive deficits seen in individuals with chronic sTBI will result in a diminished pattern of PE on repeat assessment.

Methodology
- All participants were enrolled in post-acute rehabilitation services at a multi-site day treatment program in New Jersey.
- Archival data collected between 2012 and 2018 from annual neuropsychological evaluations of residential TBI patients.
- Exclusion criteria included history of a non-traumatic ABI, unknown etiology, and incomplete or discontinued testing.
- A paired-samples t-test was conducted to compare the difference in test scores from Time 1 to Time 2.

Sample Characteristics
- 38 Participants (13 Females, 25 Males)
- Ages 23 to 63 years old (M = 44.13, SD = 10.51)
- 90.7% White, 7% Black/African American, 2.3% Asian
- Education: Mean years of education = 12.61 (SD = 1.95)
- Average time between test administrations was 13.34 months

TBI Etiology
- Neuropsychological Assessment Battery (NAB), Screening Module, Judgment subtest
- Wide Range Achievement Test, 4th Ed. (WRAT-4), Word Reading
- Texas Functional Living Scale (TFLS)

Results
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- Average age of TBI onset = 25.95 years (SD = 11.31)
- Patients were first tested ~2 decades post-injury (M = 18.88, SD = 10.37)

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