

## Background

- Individuals with chronic pain displayed impairments in attention, memory, processing speed, and executive functioning. Chronic pain and cognitive deficits were found in older adults who were at risk for cognitive disorders related to aging, as well as pain associated with injuries and illness. (Higgins et al., 2018).
- Subjective cognitive complaints in individuals with chronic pain were associated with lower performance on neurocognitive measures. Additionally, increased anxiety was associated with more consistency between self-reported cognition and objective neurocognitive performance. (Baker et al., 2017).
- There is limited evidence to support that executive functioning and attention are decreased in individuals with chronic pain; however, these areas are not uniformly affected. Psychomotor slowing in individuals with chronic pain may explain some of the decline in executive functioning. (Oosterman et al., 2012).
- Individuals with prior deficits in the areas of executive functioning or memory, as well as limited cognitive flexibility, are at a greater risk for experiencing chronic pain after a pain producing event (Attal et al., 2014).
- Although there were no differences in performance on neuropsychological testing, individuals with high chronic pain and a mild TBI reported more emotional complaints than those with lower amounts of pain (Jamora et al., 2013).
- Overall, the literature shows mixed findings on the extent of the impact of chronic pain on performance on neuropsychological testing.
- There appears to be a gap in the literature regarding chronic pain and chronic, severe TBI.

## Objective

**Purpose:** Determine if specific neuropsychological measures are associated with pain among residential patients with traumatic brain injuries. Determine if this relationship is impacted by gender.

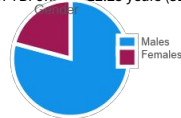
**Hypothesis:** Higher reported pain would be associated with lower scores on tests of memory, attention, and processing speed. There will be a stronger association among females than males.

## Methodology

- All participants were enrolled in post-acute rehabilitation services at a multi-site day treatment program in New Jersey.
- Archival data collected between 2017 and 2019 from annual neuropsychological evaluations of residential TBI patients.
- Participants reported at least “a little” pain for two years on the WHOQOL and completed neuropsychological testing during the same years.
- Exclusion criteria included history of a non-traumatic ABI and incomplete or discontinued testing.

### Sample Characteristics

- 24 Participants (5 Females, 19 Males)
- Ages 27 to 65 years old ( $M = 48.50$ ,  $SD = 9.60$ )
- Mean years of education = 12.79 ( $SD = 1.93$ )
- Mean age of TBI onset = 22.25 years ( $SD = 11.62$ )

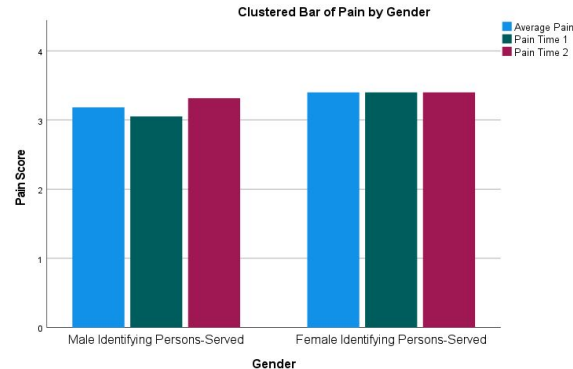


### Assessment Battery

- Neuropsychological Assessment Battery (NAB), Screening Module, Judgment subtest
- Wide Range Achievement Test, 4th Ed. (WRAT-4), Word Reading
- Texas Functional Living Scale (TFLS)
- Trails A and B
- Finger Tapping
- The World Health Organization Quality of Life (WHOQOL) Questionnaire

## Results

- Correlation analyses were performed using SPSS software. The results indicated that there was no significant association between pain scores and any of the neuropsychological test scores ( $p > 0.05$ ).
- Additionally, there was no significant difference in pain severity based on gender ( $p > 0.05$ ).



## Discussion

- Despite previous studies showing the correlation between chronic pain and lower scores on measures of memory, attention, and processing speed, the current study was unable to replicate these findings in the residential TBI population (Higgins et al. 2019).
- This indicates a need for better assessment and monitoring of chronic pain within the residential TBI population.
- Future research should aim to determine if individuals in the residential TBI population with chronic pain differ on neuropsychological testing from individuals within the same population without chronic pain.
- Another possibility for future research is to determine how functional outcomes based on the presence of chronic pain in the residential TBI population.
- There were several limitations of the current study including the following:
  - Small sample size.
  - Inclusion of only individuals reporting chronic pain.

## References

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