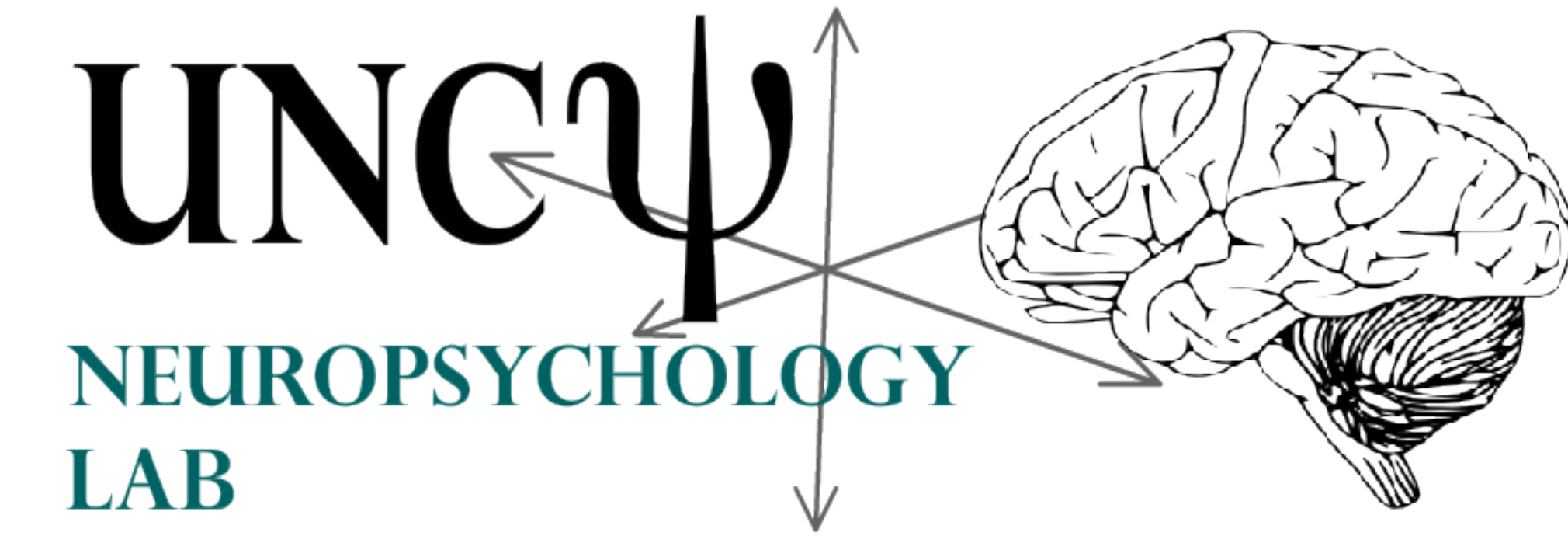




Neuropsychological Test-Retest Performance Following Traumatic Brain Injury in a Military Population

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INTRODUCTION

- Traumatic brain injury(TBI) is one of the signature injuries of the wars in Iraq and Afghanistan.
- Over the last two decades, over two million soldiers have been deployed and many are returning with mental health issues, specifically the cognitive deficits and symptoms that are common with returning soldiers include:
 - Processing speed (Iverson & Lange, 2011)
 - Working memory (Iverson & Lange, 2011)
 - Executive function (Levin and Kraus, 1994; Scheid et al., 2006; Draper and Ponsford, 2008)
 - Memory and learning (Levin,1995; Tate & Fenelon,1991)
 - Motor function (Swaine & Sullivan, 1996)
 - Mood (Hannay, 2004)
 - Headaches (Lew, Lin, Wang, Clark, & Walker, 2006)
 - Sleep disturbances (Cacirotta, Wilde, Lai, Atanov, Masel, & Kuna, 2007)
- However, few research has addressed the trends of test scores with repeated testing within this population.

OBJECTIVE

- Understand the changes of demographics and symptoms
- Are the common symptoms that are seen in research (Headaches, Sleep dysfunction) seen within our dataset? Are they common and persistent?
- Determine the frequency of change in neuropsychological performance across time.

METHODS

- Military medical officers referred Marines and sailors from Camp Lejeune, NC to private practice for neuropsychological evaluation.
- The Neuropsychological Battery that was used in was derived from a similar battery used at Walter Reed Hospital and included, but not limited to:

- CVLT-II
- COWA
- BAI-2
- Groove Pegboard
- Grip strength
- Trails Making
- Hayling and Brixton
- MMPI-2
- Stroop
- TOMM
- TSI-II
- WAIS-III/WAIS-IV
- WMS-III/WMS-IV
- WRAT-IV

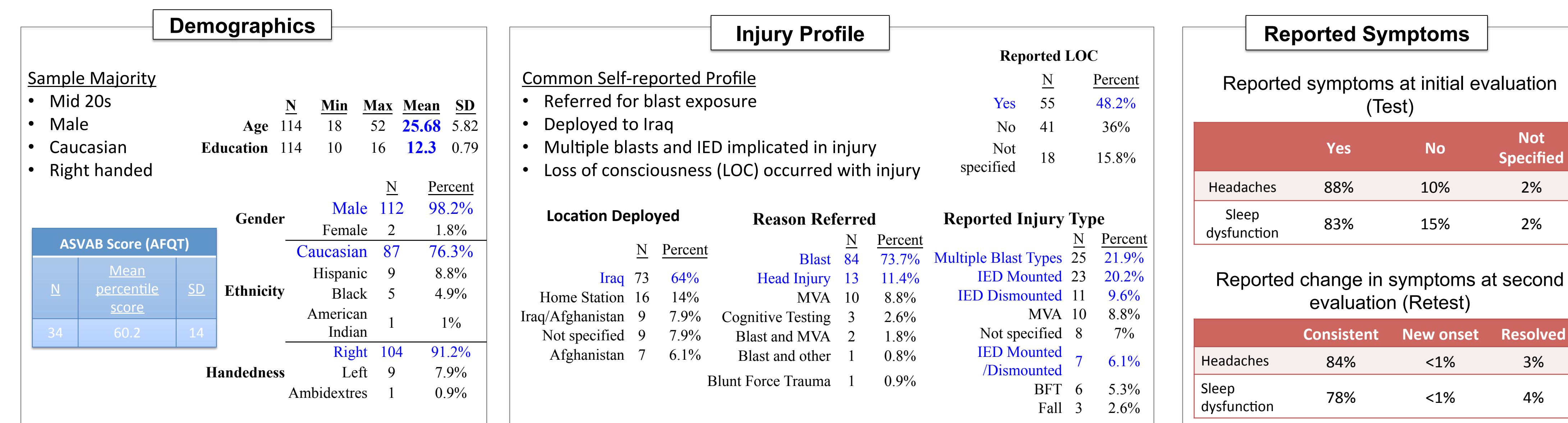
- 114 completed two testing sessions because of medical board policy procedures.

- Reliable change index (RCI) scores were calculated for five of the 14 tests using Chelune et. al (1992) RCI formula and standard clinical normative data from publishers test manuals (test-retest correlation coefficients, standard errors of measure)

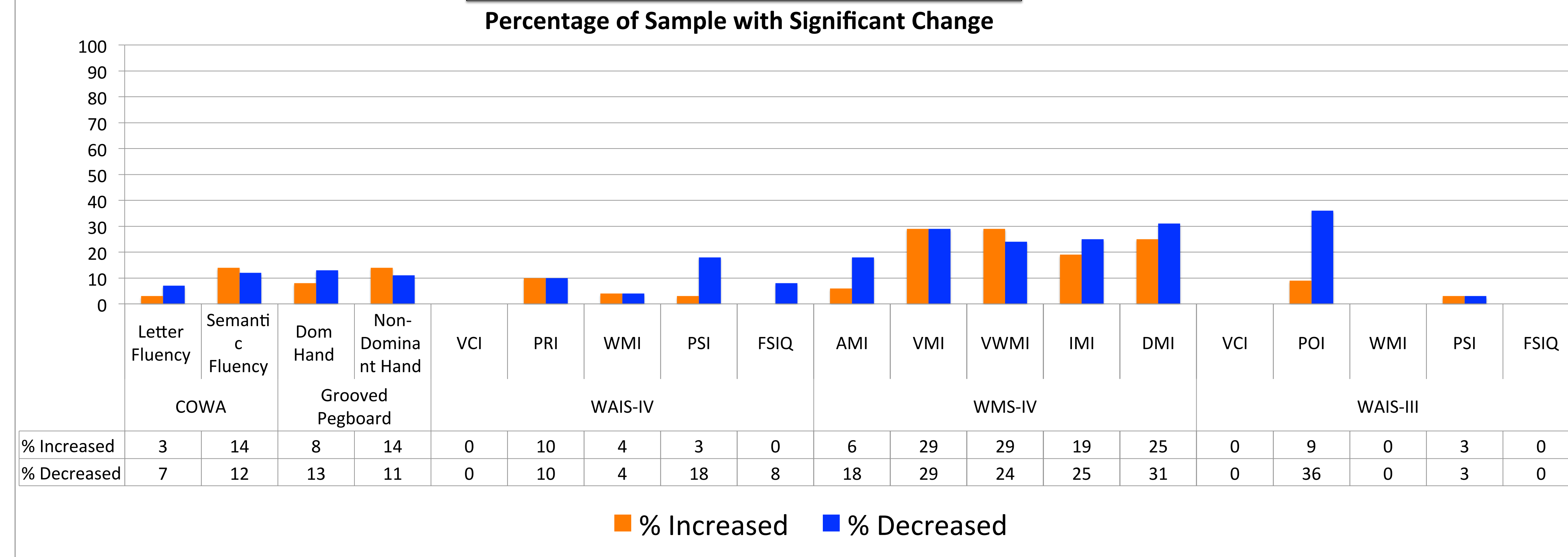
- Four groups were created stratified by time since injury

- ≤6 (1st to 2nd year since injury)
- 7-18 (2nd to 3rd year since injury)
- 19-29 (3rd to 4th year since injury)
- 30+ (4th or more years since injury)

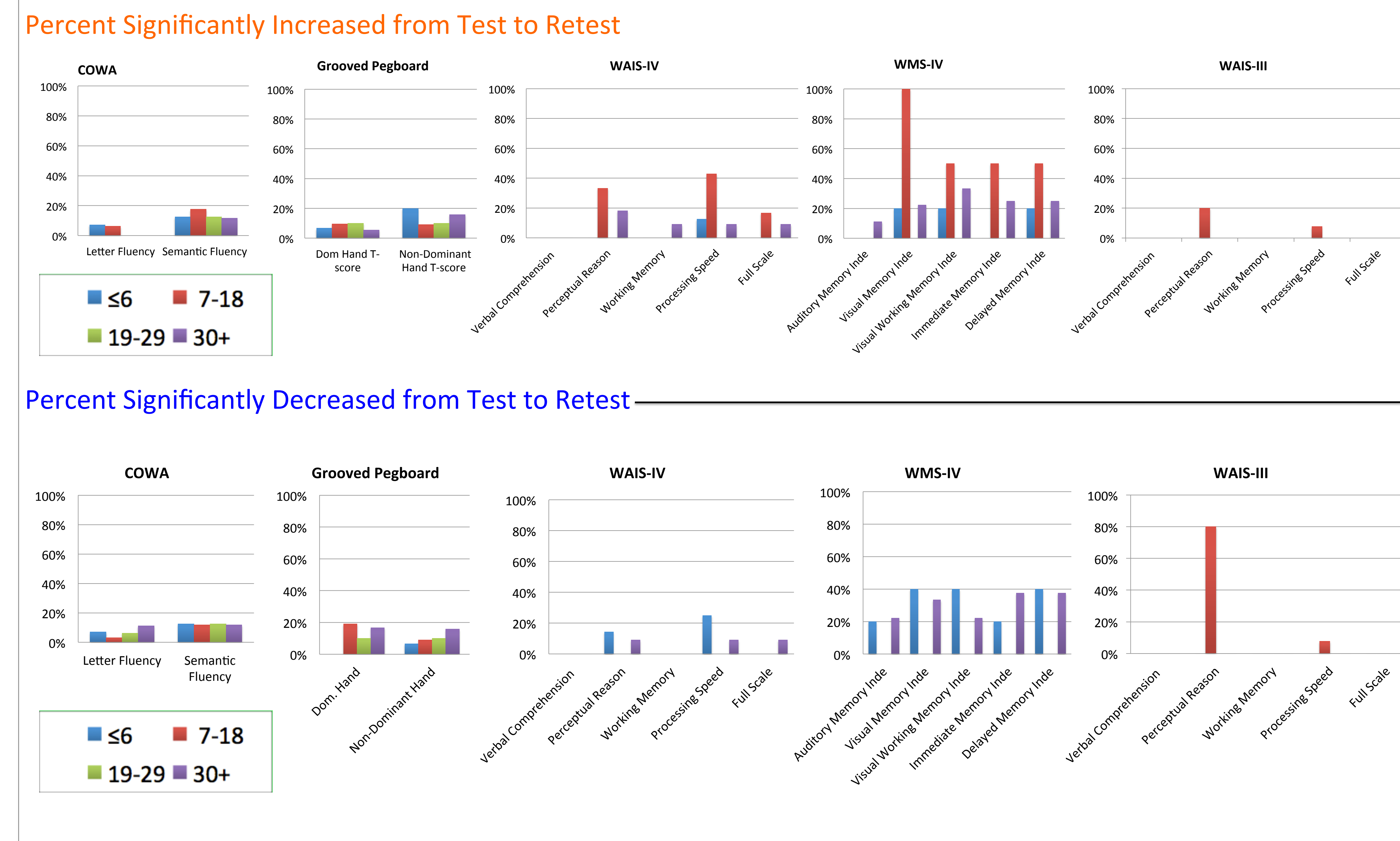
RESULTS



Reliable Change Index Results



Time Since Injury and Significant Change



SUMMARY

Current Study indicates;

- The frequency of individuals whom are impaired are greatest in those indicated by current research including:
 - Processing speed
 - Memory
 - Motor functioning
- Headaches and sleep disturbances are common and persistent
- The sample included individuals whom scores are increasing and some that are decreasing from test to retest.
- Mean percentage of the sample with significant increases for neuropsychological measures for <6, 6-18, 19-29, and 30+ months since injury respectfully include; 13%, 16%, 7%, and 10%; significant decreases respectfully include 15%, 16%, 8%, and 10%.
- 7-18 months group demonstrated the greatest frequencies of increases from test to retest, including WAIS-III/IV, COWAT, CVLT-II, WMS-IV

DISCUSSION

- This supports the research indicating that TBI is a highly individualized injury whose prognosis is highly variable from person to person. (Goldstein, Levin, Goldman, et al., 2001)
- Do increases change indicate recovery or progression of injury?
- Scores may be affected by:
 - Effect of medication
 - Post Traumatic Stress Disorder
 - Environmental factors
 - Biopsychosocial conditions
 - Symptoms
 - Effort and malingering
 - Treatment/Intervention sought out after initial visit
 - Activity and Diet

LIMITATIONS

- Retrospective data analysis
- Lack of indication of severity or location of injury
- Missing test data and small sample sizes
- Self reported measures and variables
- Lack of experimental control over neuropsychological testing conditions and practices
- Knowledge about seeking treatment/intervention after initial visits
- Use of clinical normative data to compare to a military sample
- RCI assumptions of psychometric properties

FUTURE DIRECTIONS

- Explore other neuropsychological tests within the database with RCI calculations
- Look for moderation and mediation of impairments and change frequencies
- Explore different methods of detecting clinically significant change (Regression based)
- Correlate ASVAB scores with major neuropsychological tests to better understand premorbid functioning of within Soldiers and their relationship to common neuropsychological tests.

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