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Objective: Illness perception, or the ways in which individuals understand and cope with injury, has been extensively studied in the broader medical literature and has been found to have important associations with clinical outcomes across a wide range of medical conditions. However, there is a dearth of knowledge regarding how perceptions of traumatic brain injury (TBI) influence outcome and recovery following injury, especially in military populations. The purpose of this study was to examine relationships between illness perception, as measured via symptom attribution, and neurobehavioral and neurocognitive outcomes in Veterans with TBI history.
Participants and Methods: This cross-sectional study included 44 treatment-seeking Veterans (86.4% male, 65.9% white) with remote history of TBI (75.0% mild TBI). All Veterans were referred to the TBI Cognitive Rehabilitation Clinic at VA San Diego and completed a clinical interview, self-report questionnaires, and a neuropsychological assessment. A modified version of the Neurobehavioral Symptom Inventory (NSI) was administered to assess neurobehavioral symptom endorsement and symptom attribution. Symptom attribution was assessed by having participants rate whether they believe each NSI item was caused by TBI. A total symptom attribution score was computed, as well as the standard NSI total and symptom cluster scores (i.e., vestibular, somatic, cognitive, and affective symptom domains). Three cognitive composite scores (representing mean performance) were also computed, including memory, attention/processing speed, and executive functioning. Participants were excluded if they did not complete the NSI attribution questions or they failed performance validity testing.
Results: Results showed that the symptoms most frequently attributed to TBI included forgetfulness (82%), poor concentration (80%), and slowed thinking (77%). There was a significant positive association between symptom attribution and the NSI total score ($r = 0.62$, $p < .001$), meaning that greater attribution of symptoms to TBI was significantly associated with greater symptom endorsement overall. Symptom attribution was also significantly associated with all four NSI symptom domains (r's = 0.47-0.66; all p's < .001), with the strongest relationship emerging between symptom attribution and vestibular symptoms. Finally, linear regressions demonstrated that symptom attribution but not symptom endorsement was significantly associated with objective cognitive functioning. Specifically, greater attribution of symptoms to TBI was associated with worse memory ($\beta = -0.33$, $p = .035$) and attention/processing speed ($\beta = -0.40$, $p = .013$) performance.
Conclusions: Results showed significant associations between symptom attribution and (1) symptom endorsement and (2) objective cognitive performance in Veterans with a remote history of TBI. Taken together, findings suggest that Veterans who attribute neurobehavioral symptoms to their TBI are at greater risk of experiencing poor long-term outcomes. Although more research is needed to understand how illness perception influences outcomes in this population, results highlight the importance of early psychoeducation regarding the anticipated course of recovery following TBI.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
Keyword 1: traumatic brain injury
Keyword 2: self-report
Keyword 3: neuropsychological assessment
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3 Optimizing Cognitive Rehabilitation of the Injured Warfighter

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Objective: Many individuals who experienced a mild traumatic brain injury (mTBI) have persistent cognitive complaints. Traditional cognitive rehabilitation (TCR) interventions were primarily developed for severe neurological injury which has limited effectiveness in rehabilitation of active duty military personnel who have the goal of returning to full military operational status. To remain on active duty, warfighters must have sufficient mental competency to safely and effectively function in complex environments such as combat. There is need for a cognitive rehabilitation approach that addresses demands of military personnel to expedite return to duty. The Strategic Memory Advanced Reasoning Training (SMART) program is novel alternative to TCR. SMART is an evidence-based advanced reasoning protocol that enhances cognitive domains essential to military readiness (e.g., mental agility, strategic learning, problem solving, and focus) and requires less than half of the treatment time. The objective of this study was to assess the efficacy of SMART compared to TCR in terms of overall recovery as well as change in specific cognitive domains.
Participants and Methods: Participants were recruited from a military treatment facility. All patients had at least one diagnosed mTBI as well as persistent cognitive complaints. Participants completed the Rey-15 to ensure performance validity. Final sample was SMART n = 28 and SCORE n = 19. Primary dependent measure was the Global Deficit Scale (GDS). GDS was calculated from: Hopkins Verbal Learning Test-Revised (HVLT-R); Delis Kaplan Executive Functioning System Color Word (CW) and Trail Making (TM), Paced Auditory Serial Addition Test (PASAT), and the Symbol Digit Modality Test (SDMT). Demographically corrected t-scores were converted to deficit scores as follows: >40 = 0, 35-39 = 1, 30-34 = 2, 25-29 = 3, 20-24 = 4, <20 = 5. Deficit scores were averaged to calculate GDS. For each measure, Hohen's g was analyzed for effect size comparisons pre-post treatment.
Results: Average number of treatment hours was significantly lower in the SMART condition (SMART: M = 18.47 hours, SD = 2.17; TCR: M = 42.42 hours, SD = 3.79, p <.001). A repeated measures ANOVA showed a significant change on GDS post-treatment (F = 30.25, p < .001) with a large effect size (η2 = .402); however, the interventions did not differ on GDS change. Impact on cognitive domains was relatively equivalent for processing speed (SMART h = 0.67 vs TCR h = -.54) and executive function (SMART h = -0.92 vs TCR h = -.85); however, SMART had a larger impact on memory (SMART h = -0.81 vs TCR h = -.39). SMART resulted in large improvements in retention and recognition memory which were minimally impacted by TCR.
Conclusions: Both TCR and SMART had comparable effectiveness in improving cognitive impairment, though SMART was completed in less than half of the treatment time. Both interventions had large effect sizes on processing speed and executive functioning; however, SMART was more effective in improving long-term memory. Memory is an integral part of military readiness. Further investigation is required to determine the relative effectiveness of these two approaches to improving cognitive readiness of the warfighter.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: concussion/ mild traumatic brain injury
Keyword 2: cognitive rehabilitation
Keyword 3: memory training
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4 TBI and Blast Disrupt Normal Relationships Between Brain Function, Cognitive Performance, and Psychiatric Symptom Severity

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Objective: Determine how characteristics of deployment mild traumatic brain injury (TBI) and blast exposure influence the relationship

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