and diagnosis as both very strict and very weak adherence to a temporal-spatial heuristic can be indicative of atypical function. The study supports this novel scoring system as a fast and reliable means to systematically measure RCF Cluster Strategy that with further validation could be adopted within clinical practice.

Categories:
Assessment/Psychometrics/Methods (Adult)
Keyword 1: neuropsychological assessment
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17 Observing Constructs of Drawing Process of the Rey-Osterrieth Complex Figure Test as an Indicator of Persisting Post-Concussive Symptoms

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Objective: Evidence regarding cognitive impairment following concussion/mild traumatic brain injury (mTBI) has been conflicting. Criticism has focused on what is being measured, how it is being measured, and who is being measured (Pertab et al, 2009; Iverson, 2010). However, literature suggests that clinicians and researchers should examine how individuals complete a task rather than what they achieve (Geary et al, 2011). Studies examining the drawing process used to complete the Rey-Osterrieth Complex Figure Task (RCF) have been inconclusive and methodologically weak. The current study addressed several criticisms and limitations by examining whether observing RCF drawing process, including a novel strategy construct, could support a diagnosis of persisting post-concussive symptoms.
Participants and Methods: Sixteen individuals with a history of concussion/mTBI and sixteen matched controls (age, sex, IQ) were included in multiple regression analyses to examine whether RCF drawing constructs predict post-concussive symptoms (mean age 43.59 years; 22 female). At least 3 months had passed since the concussive/mTBI event. Post-concussive symptoms were assessed with the Rivermead Post-Concussive Symptoms Questionnaire (RPCSQ) and the Mental Fatigue Scale (MFS). Separate regression analyses were conducted for each scale. Predictor variables were statistically selected from a catalogue of 4 RCF drawing process constructs – Wholeness, Order, Continuation and Strategy; 15 traditional measures of cognitive function; and 3 psychological state measures. 17 variables were included in the model for the RPCSQ, including Order and Strategy. 18 variables were included for the MFS, including Order, Continuation and Strategy.
Results: Order scores were found to be one of the strongest predictors of RPCSQ scores (B = -2.06; β= 0.20), and MFS scores (B = -1.54, β = 0.26). Individuals drawing fewer core elements at the start of the drawing process were found to report more post-concussive symptoms. Participants who observed a stronger temporal-spatial strategy heuristic, as measured by the Strategy construct, reported more symptoms, particularly mental fatigue (RPCSQ: B = 0.49, β = 0.09; MFS: B = 0.58, β = 0.19). Continuation was also found to be predictive of MFS scores (B = -0.24, β = -0.14), such that the fewer continuation points that were observed, the greater the MFS score.
Conclusions: Two constructs of RCF drawing process – Order and Strategy – were found to predict persisting post-concussive symptoms generally, and mental fatigue specifically. Continuation was also found to predict mental fatigue. Such findings provide a cognitive explanation for patient reports of mental fatigue following concussion – recognised as the most common and persistent symptom. Strict adherence to a temporal-spatial strategy may indicate cognitive inflexibility – a theory supported by the inclusion and influence of other cognitive tasks in the regression models that rely on cognitive flexibility. Individuals exert more effort to shift between perceptual planes and to override global bias, thereby expending cognitive resources more quickly and to a greater extent. These findings provide a credible explanation for the lack of evidence of cognitive impairments in previous research, where neuropsychological tasks focus on attainment rather than process. These findings highlight the clinical importance of assessing cognitive dysregulation, specific cognitive processes and cognitive deficits post-concussion/mTBI.

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18 Nightmares Independently Predict Neurobehavioral Symptoms in Adults with mTBI

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Objective: To investigate the informative value of nightmares on neurobehavioral functioning in individuals with mild traumatic brain injury (mTBI) beyond general sleep disturbance.
Participants and Methods: A sample of 146 adults with mTBI (mean age = 45.1±16.0), recruited from a specialized concussion treatment center, underwent an assessment of neurobehavioral functioning using the Behavioral Assessment Screening Tool (BAST), self-reported habitual sleep disturbance and quality (via the Pittsburgh Sleep Quality Index; PSQI), and reported nightmare frequency in the past two weeks.
Results: Nightmare frequency was the strongest predictor of negative affect (β = .362, p <.001), anxiety (β = .332, p <.001), and impulsivity (β = .270, p <.001) after controlling for sex and age. Sleep disturbance accounted for the greatest variance in depression (β = .493, p <.001), burden from concussion (β = .477, p <.001), and fatigue (β = .449, p <.001) after controlling for sex and age.
Conclusions: Nightmares independently associate with neurobehavioral symptoms and likely have differential etiology from reported sleep disturbance. Nightmare frequency was more strongly related to positive neurobehavioral symptoms (i.e., added factors that impact functioning, e.g., anxiety), while general sleep disturbance was associated with negative neurobehavioral symptoms (i.e., factors taken away that impact functioning, e.g., lack of energy). Our findings suggest that neuropsychological evaluations of individuals with mTBI should assess for sleep disturbance and nightmare frequency as risk factors for neurobehavioral barriers to functioning.

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Keyword 2: brain injury
Keyword 3: concussion/ mild traumatic brain injury
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19 Consistency of self-reported sport-related concussion history

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Objective: An accurate accounting of prior sport-related concussion (SRC) is critical to optimizing the clinical care of athletes with SRC. Yet, obtaining such a history via medical records or lifetime monitoring is often not feasible necessitating the use of self-report histories. The primary objective of the current project is to determine the degree to which athletes consistently report their SRC history on serial assessments throughout their collegiate athletic career.
Participants and Methods: Data were obtained from the NCAA-DoD CARE Consortium and included 1621 athletes (914 male) from a single Division 1 university who participated in athletics during the 2014-2017 academic years. From this initial cohort, 752 athletes completed a second-year assessment and 332 completed a third-year assessment. Yearly assessments included a brief self-report survey that queried SRC history of the previous year. Consistency of self-reported SRC history was defined as reporting the same number of SRC on subsequent yearly

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