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Objective: Few to no studies have directly compared the relative classification accuracies of the memory-based (Brief Visuospatial Memory Test-Revised Recognition Discrimination [BVMT-R RD] and Rey Auditory Verbal Learning Test Forced Choice [RAVLT FC]) and non-memory based (Reliable Digit Span [RDS] and Stroop Color and Word Test Word Reading trial [SCWT WR]) embedded performance validity tests (PVTs). This study's main objective was to evaluate their relative classification accuracies head-to-head, as well as examine how their psychometric properties may vary among subgroups with and without genuine memory impairment.
Participants and Methods: This cross-sectional study included 293 adult patients who were administered the BVMT-R, WAIS-IV Digit Span, RAVLT and SCWT during outpatient neuropsychological evaluation at a Midwestern academic medical center. The overall sample was 58.0% female, 36.2% non-Hispanic White, 41.3% non-Hispanic Black, 15.7% Hispanic, 4.8% Asian/Pacific Islander, and 2.0% other, with a mean age of 45.7 (SD=15.8) and a mean education of 13.9 years (SD=2.8). Three patients had missing data, resulting in a final sample size of 290. Two hundred thirty-three patients (80%) were classified as having valid neurocognitive performance and 57 (20%) as having invalid neurocognitive performance based on performance across four independent, criterion PVTs (i.e., Test of Malingering Memory Trial 1, Word Choice Test, Dot Counting Test, Medical Symptom Validity Test). Of those with valid neurocognitive performance, 76 (48%) patients were considered as having genuine memory impairment through a memory composite band score (T≤37 for (RAVLT Delayed Recall T-score + BVMT-R Delay Recall T-score / 2).
Results: The average memory composite band score for valid neurocognitive scores was T = 49.63 as compared to T = 27.57 for genuine memory impairment individuals. Receiver operating characteristic [ROC] curve analyses yielded significant areas under the curve (AUCs=.79-.87) for all four validity indices (p's < .001). When maintaining acceptable specificity (91%-95%), all validity indices demonstrated acceptable yet varied sensitivities (35%-65%). Among the subgroup with genuine memory impairment, ROC curve analyses yielded significantly lower AUCs (.64-.69) for three validity indices (p's < .001), except RDS (AUC=.644). At acceptable specificity (88%-93%), they yielded significantly lower sensitivities across indices (19%-39%). In the current sample, RAVLT FC and BVMT-R RD had the largest changes in sensitivities, with 19% and 26% sensitivity/90%-92% specificity at optimal cut-scores of ≤10 and ≤2, respectively, for individuals with memory impairment, compared to 65% and 61% sensitivity/94% specificity at optimal cut-scores of ≤13 and ≤4, respectively, for those without memory impairment.
Conclusions: Of the four validity scales, memory-based embedded PVTs yielded higher sensitivities while maintaining acceptable specificity compared to non-memory based embedded PVTs. However, they were also susceptible to the greatest declines in sensitivity among the subgroup with genuine memory impairment. As a result, careful consideration should be given to using memory-based embedded PVTs among individuals with clinically significant memory impairment based on other sources of information (e.g., clinical history, behavioral observation).

Categories:
Assessment/Psychometrics/Methods (Adult)
Keyword 1: performance validity
Keyword 2: effort testing
Keyword 3: memory complaints
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22 Cognitive and Psychological Profiles of a Specialized Military Force

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Objective: The Explosive Ordinance Disposal (EOD) community within the US Military is a specialized force in charge of the most fundamental aspects of the military operations in combat which include disarming and safely disposing explosive threats. EOD technicians have provided critical protection for our military and civilians exposed to improvised explosive devices (IEDs), which became the signature threat of both Afghan and Iraq wars. The nature of the job puts EOD technicians at high risk for blast exposures (from training and combat) resulting in traumatic brain injury (TBI) and sub-concussive head impact. Further, this population is exposed to high levels of combat with psychologically traumatic events. Given the groups neurological and psychological risk factors as well as their critical role in combat, we hypothesized that EOD technicians will present with increased psychological and neurobehavioral symptoms as well decreased cognitive functioning compared to other military personnel.
Participants and Methods: Participants were recruited from a military hospital with at least one diagnosed mild traumatic brain injury (MTBI). Exclusion criteria included TBI greater then mild severity and invalid performance on the Rey-15. Final sample included 10 EOD and 90 other military.
Cognitive measures included Hopkins Verbal Learning Test-Revised (HVLT-R); DKEFS Color Word Condition 4 Switching (CW4), Trail Making Condition 3 Letter Sequencing (TM3) and Condition 4 Switching (TM4), and Paced Auditory Serial Addition Test (PASAT). Self-report measures included the Neurobehavioral Symptom Inventory (NSI), Key Behaviors Change Inventory (KBCI), Post-Traumatic Stress Disorder Checklist (PCL-M), Patient Health Questionnaire (PHQ), Combat Exposure Scale (CES) and Blast Exposure Threshold Survey (BETS). The Ohio State University Traumatic Brain Injury Identification Method (OSU) assessed TBI history.
Results: EOD were older (EOD M=38.4, SD=4.06; Others M=33.32, SD=8.08; p=0.05), had a higher pre-morbid IQ (EOD M=110.90, SD=7.64; Other M=101.59, SD=10.55; p=0.008), more combat deployments (EOD M=5.5, SD=2.37; Others M=3.55, SD=2.98; p=0.049) and exposure to wartime atrocities (CES, p=0.003). They had greater number of MTBI (OSU EOD M=6.67, SD=3.33; Other M=3.67, SD=2.34; p=0.007), blast related MTBI (OSU-TBI EOD M=2.33, SD=1.63; Other M=0.67, SD=0.91; p<0.001), and exposure to large explosives (BETS p<0.0001). EOD reported better attention skills (KBCI Inattention, p=0.016, d=0.82; Impulsivity p=0.047, d=0.67). There was a trend for EOD to have lower neurobehavioral symptoms (NSI Total, d=0.32), post-traumatic stress (PCL d=0.39), and depression (PHQ d=0.50); however, despite the moderate effect sizes (p's >0.05). EOD presented with significantly better scores on DKEFS TMT3 (p=0.037, d=0.70), HVLT-R-Total (p=0.001, d=1.10), HVLT-R-Delayed (p=0.03, d=0.74), and attention/executive functioning skills (PASAT p=0.001, d=1.12). DKEFTS CW4 Switching (d=0.51) and TMT4 Switching were approaching significance (d=0.61) with EOD performing better.
Conclusions: As expected, the EOD sample in this study had higher number of combat deployments, greater exposure to combat atrocities (e.g., death), higher levels of exposure to large explosives, as well as a higher number of MTBI. Inconsistent with our hypotheses, despite these psychological and neurological risk factors, EOD performed better on cognitive measures of memory, attention and executive functioning. They also reported less problems with inattention and impulsivity. Results may reflect the impact of psychological and cognitive resiliency.

Categories:
Assessment/Psychometrics/Methods (Adult)
Keyword 1: traumatic brain injury
Keyword 2: cognitive functioning
Keyword 3: attention
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23 The Wandering Mind: Variability in Mindfulness is Associated with Improved Aspects of Executive Functioning.

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