aimed to characterize patterns of brain activity that occur when individuals with TBI render JOLs and RCJs during a meta-memory task. Differences between JOL- and RCJ-related patterns of activation were also explored.
Participants and Methods: 20 participants with moderate-to-severe TBI completed a metacognition task while undergoing functional magnetic resonance imaging (fMRI). Participants were first exposed to target slides with a set of polygons placed in specific locations, then asked to identify the target slides within a set of distractors. Before identifying the target slides, participants rated how well they believed they would remember the polygons' shape and location (JOL). After answering, they rated how confident they were that the answer they provided was correct (RCJ). First-level time series analyses of fMRI data were conducted for each participant using FSL FEAT. Higher-level random effects modeling was then performed to assess average activation across all participants. Finally, contrasts were applied to examine and compare JOL- and RCJ-specific patterns of activation.
Results: JOLs were associated with activation of the left frontal gyri, bilateral anterior cingulate, left insula, and right putamen ($p < 0.01$). RCJs were associated with activation of the bilateral frontal gyri, bilateral posterior and anterior cingulate, left insula, right putamen, and left thalamus ($p < 0.01$). Compared to RCJs, JOLs demonstrated greater left insula activation ($p < 0.01$). Compared to JOLs, RCJs demonstrated greater activation of the left superior frontal gyrus, bilateral middle frontal gyrus, and bilateral anterior cingulate ($p < 0.01$).
Conclusions: The areas of activation found in this study were consistent with structures previously identified in the broader metacognition literature. Overall, RCJs produced activity in a greater number of regions that was more bilaterally distributed compared to JOLs. Moreover, several regions that were active during both metacognitive subprocesses tended to be even more active during RCJs. A hypothesis for this observation suggests that, unlike JOLs, the additional involvement of reflecting on one's immediate memory of completing the task during RCJs may require greater recruitment of resources compared to JOLs. Importantly, these findings suggest that, while different metacognitive subprocesses may recruit similar brain circuitry, some subprocesses may require more potent and widespread activation of this circuitry than others. As such, subprocesses with greater activational needs and complexity, such as RCJs, may be more susceptible to damage caused by TBI. Future research should aim to compare patterns of activation associated with certain metacognitive subprocesses between survivors of TBI and healthy controls.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
Keyword 1: traumatic brain injury
Keyword 2: metacognition
Keyword 3: neuroimaging: functional
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22 Head Injury and Executive Functioning in the MIDUS Cohort

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Objective: It has been well established that sustaining a head injury can result in cognitive impairments, but there is little research on the impact of head injuries within middle-aged and older adult samples. Given the two most common samples for head trauma research are athletes and military service members, most of this literature presents findings of individuals under 35 years old. It is important to study head injury outcomes in older samples because greater lengths of time may have passed since the injuries occurred, which may influence findings. Additionally, research indicates that head injuries can lead to measurable executive functioning difficulties – a cognitive domain previously established as susceptible to cognitive ageing-related decline. Therefore, the current investigation seeks to assess the connection between history of head injury and executive functioning performance in middle-aged and older adult participants.
Participants and Methods: The current study examined 1150 participants from the 2nd wave of the Midlife in the United States cohort (MIDUS) and 801 participants of the MIDUS refresher panel. As a part of the biomarkers study, participants indicated how many head injuries they experienced (up to three) along with whether they were hospitalized and the year the

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injury occurred. As a part of the cognitive study, participants completed a battery of measures that were combined into a single Z-scored executive functioning measure. Regression was used to evaluate the association between self-reported head trauma and executive functioning, controlling for age and gender. Post hoc analyses examined hospitalization and recency of head injury.
Results: Of the 1951 included participants, 70.7% reported zero head injuries, 20.8% reported one head injury, 5.8% reported two head injuries, and 2.7% reported at least three head injuries. History of head trauma was not associated with lower levels of executive functioning ($F[3,1945]=2.68$, $p=.38$). Furthermore, executive functioning performance was not associated with hospitalization for head injury ($b=-.04$, $p=.31$) or recent head injuries ($b=-.04$, $p=.70$).
Conclusions: The current results do not provide evidence of decreased executive functioning performance linked to history of head injury in middle-aged and older adults. These findings are inconsistent with earlier literature suggesting that executive dysfunction is associated with prior head trauma. It is important to consider, however, that the operationalization of executive functioning as a cognitive domain is controversial and produces significant debate. Therefore, the present results solely indicate a lack of connection between previous head trauma and executive functioning, specifically as assessed by the current definition and measures. The present analyses were limited by the broad inclusion of all head injuries rather than a narrowed scope of specifically concussions or mild traumatic brain injuries. However, the study had the advantage of being adequately powered via a large sample size. The current results suggest that additional research is needed within middle-aged and older adult samples to investigate possible connections between head trauma and executive functioning performance using alternate definitions and assessments.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
Keyword 1: executive functions
Keyword 2: neuropsychological assessment
Keyword 3: cognitive functioning
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23 Cross-Sectional Analysis of Rehospitalization Following Discharge from Inpatient Rehabilitation in Veterans with Traumatic Brain Injury Up to 10 Years Postinjury

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Objective: To characterize reasons for rehospitalization of Veterans and Service Members with mild, moderate, and severe traumatic brain injury (TBI) who received inpatient rehabilitation at a Veterans Affairs (VA) Polytrauma Rehabilitation Center (PRC) up to 10 years postinjury. TBI is a chronic condition, and a subset of TBI survivors experience rehospitalization after discharge from inpatient rehabilitation. Extant literature focuses primarily on persons with moderate-to-severe TBI and utilizes broad categories when determining readmission reasons. The present study aimed to delineate with greater specificity the reasons for rehospitalization up to 10 years postinjury across the TBI severity spectrum.
Participants and Methods: Participants were drawn from the VA TBI Model Systems multicenter longitudinal study for a cross-sectional analysis. Eligibility criteria included TBI diagnosis per case definition; age ≥ 16 years at TBI; admitted for inpatient rehabilitation at one of the five VA PRCs; and informed consent by the participant or legally authorized representative. At follow up interviews 1, 2, 5, and 10 years post-TBI, participants were asked whether they

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